

CAPTAIN ANGUS BUCHANAN'S AIR EXPEDITION.

IV.

THE BIRDS COLLECTED BY CAPT. ANGUS BUCHANAN DURING HIS JOURNEY FROM KANO TO AIR OR ASBEN.

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(Plates I.-IX.)

THE best zoogeographical boundary, apart from vast oceans, has hitherto been the Sahara, a wide belt of poorly inhabited and unexplored country. As long as we knew very little about it, this was a very simple question—north of the Sahara palaearctic, south of it aethiopian. This contention, however, was bound to be shaken to some extent when the Sahara (as it is marked on maps) became zoologically explored. Until the second decade of this century the Great Desert had only been touched by zoological collectors on some of its borders: in the east near the Nile, in the north from Algeria, Tunisia, and Tripolitania. South of Algeria the Koenigs had collected as far as Ouargla, Erlanger and Spatz from Tunisia about as far or little more to the south; Whitaker's intrepid collector, Dodson, had penetrated as far as Murzuk in Fezzan, south of Tripolitania, and his collections added much to our knowledge, but were evidently not exhaustive. J. Dybowski had collected during his inspecting-tour to El-Golea, but of the 42 species of birds which he brought home very few came actually from El-Golea, but were taken all along the route from Ghardaia to El-Golea, and mostly not properly labelled. Riggenbach collected a few birds at the Rio de Oro and Comte de Dalmas at the Baie de Lévrier, Cap Blanco south, but neither of these latter travellers had penetrated into the interior, and each had only obtained a few specimens.

In 1912 I collected industriously, accompanied by Hilgert, as far south as Tidikelt (In-Salah), and in the same year Spatz and Fromholz collected as far as Temassinin. In 1914 Geyr von Schweppenburg and Spatz made their fruitful expedition to Ideles, on the slopes of the Hoggar Mountains. Thus some knowledge was obtained of the Saharan avifauna, but its greater part remained still unknown—not a step had been made (by ornithological collectors) into the desert south of Morocco and north of the Senegal, the central belt remained unknown almost from the Nile to the Atlantic.

Looking at any map, a somewhat large mountain-land, Air or Asben, catches the eye in the middle of the Sahara, on older maps and in textbooks called an "oasis," which is, however, a most misleading name for a mountainous country with desert traets and valleys, towns and villages, mountains rising up to about 2,000 m. in height.

Zoologically Air remained absolutely unknown until Buchanan's expedition. It was with great satisfaction to myself that Lord Rothschild fell in with my

ideas about it, with his usual zeal and interest in all scientific exploration, and that Capt. Buchanan accepted his offer to make a collecting trip to Aïr for the Tring Museum. The exploration of that country has been in my mind since 1886. In that year the leader of a Tuareg caravan in Hausaland, who had brought salt from Bilma, offered to take my companion Staudinger and me to Asben, but we had not the means, neither the necessary outfit, ammunition, etc., nor the money, to accept it, nor would it have been possible, at that time, to collect freely in Asben, which was only permanently occupied by the French in 1905. It was one of my many unfulfilled dreams of life to visit Asben myself, but I have never given up the hope one day to see natural history specimens from there. In 1901 I wrote (*Nov. Zool.* vol. viii. p. 118), "what may the extensive mountains of Tintellust, what Asben or Aïr have in store for us." In *Nov. Zool.* vol. xx., 1913, p. 20, I again directed attention to Asben. We knew already from Barth's *Travels* that Aïr has tropical vegetation, that some valleys are fertile and contain good water, that ostriches, lions, giraffes, birds were seen by him, that near Agades he observed monkeys and butterflies. Jean, in 1909, in his book, *Les Touaregs du Sud-Est, l'Aïr*, mentions lions in the mountains of Tingué and Baguezan, foxes, hyaenas, cats, antelopes, monkeys, but he adds that giraffes do not now exist in the country, and that the ostrich is not found north of Damergu; of other birds he mentions, besides some which, like turtle-doves, occur in palaearctic regions as well as in the tropics, and some unintelligible names, glossy starlings, which are only found in tropical countries. The French trader Brand in In-Salah, who had passed Aïr on his journey to and from Kano, told me in 1912 that Aïr abounded in brilliantly coloured birds, such as sun-birds ("colibris") and glossy starlings, and that weaver-birds' nests could be seen in the trees. On Plate XVIII. Jean reproduces a large vulture, which may possibly be a young *Gyps rüppellii* or *G. fulvus*. It seems to be too large for *Lophogyps*, and cannot be *Pseudogyps*. Foureau in *D'Alger au Congo* mentions several birds at Iferouane, among them evidently *Columba guinea*, a bird of the size of a thrush, with golden underside and very glossy green back (? *Chrysococcyx cupreus*), *Pterocles senegalus* (probably error!). At Aguellal he observed *Corvus albus*, *Numida*, glossy starlings, and small birds "de toutes nuances."

Meagre as all these statements are, they proved that the fauna of Asben is chiefly, if not entirely, tropical. This is borne out by Buchanan's collections. Of the birds nearly all may—apart from migrants—be called tropical species or subspecies; two, *Streptopelia turtur hoggara* and *Columba livia targia*, are so far only known from the Hoggar Mountains, where Geyr discovered them, and nine are inhabitants also of the Northern Sahara, one is a sub-species, and closely allied to the South Algerian *Crateropus fulvus*. The mammals are on the whole Sudanese forms or close allies of such, and what there is of Algerian forms is really Saharan, and not found in Algeria proper. The lepidoptera are essentially Saharan, many forms being similar to those found by Geyr and myself in the Sahara between the Atlas and Tidikelt, and the Hoggar Mountains.

The boundary between the palaearctic and tropical African fauna may therefore be regarded as fairly fixed to about the 20th degree of latitude, though it is, of course, not a hard-and-fast dividing line, there being many exceptions—even among birds which form the main basis of these notes. I am sorry to say I cannot agree with my friend Geyr v. Schweppenbourg's conclusions as put forth

in *Journ. f. Orn.* vol. lxx., 2, pp. 43-56. Nobody will and can deny that Asben, with such birds as *Nectariniidae*, glossy starlings, *Burhinus capensis*, *Necrosyrtes*, *Chrysococcyx*, hornbills, *Colius macrourus*, *Pogoniulus*, *Scopelus*, *Batis*, *Eremopterix*, *Passer griseus*, weaver-birds, etc., has a tropical bird population. With equal certainty, however, I consider a country where all these types of tropical avifauna are fully absent, and where, instead, *Burhinus oedicnemus*, *Sylvia nana deserti*, *Buteo ferox cirtensis*, *Athene noctua saharae*, and other birds which also inhabit palaearctic regions north of the Sahara, or along its northern portion, form the bird population, as palaearctic. The correctness and erudition shown in Geyr's remarks is great, but the *origin* of certain forms does not, in my opinion, prove that they can nowadays be called upon as witnesses for the relationship of a fauna. There are in Morocco, Algeria, etc., and even in Europe, forms of undoubted tropical origin, such as *Alcedo atthis ispida* and *Coracias garrulus* in Europe, the often-quoted *Pycnonotus barbatus barbatus*, *Telephonus* (*Harporhynchus*), *Asio capensis tingitanus*, *Melierax musicus*, *Streptopelia senegalensis phoenicophila*, *Apus affinis galilejensis*, in Africa Minor, yet these forms are *now* palaearctic birds, and can therefore not prove the character of a country to be tropical.

Of the tropical birds from the expedition, 14 (possibly 15) are peculiar, modified forms, but only 6 of them are found in Asben proper, 6 are equally found in Damergu, Zinder, or Northern Hausaland, which are naturally richer in animal life than the dry, desolate mountains of Aïr.

The birds show once more that the Sudan from east to west, like the Saharan province, forms a uniform faunal zone. In olden times, when Jean Cabanis was alive and head of the bird department in the Berlin Museum, a saying of his used to be proverbial among his disciples, "*dat jeht so durch*" ("that ranges through"), which he frequently used to emphasise that certain forms extended from the west (Senegal) to the Eastern Sudan. The name *Sudan* is the ancient name for the negro-country south of the Sahara, from west to east. Therefore we correctly called the expedition to Hausaland in 1885 and 1886, of which my journey to Sokoto and Kano formed a part, the expedition to the Western Sudan, and Selater and Praed published a list of the birds from what they call the "Anglo-Egyptian Sudan." Unfortunately it has become customary to restrict the name Sudan to that latter region, in which, moreover, is included the whole of Nubia, which should be separated historically, geographically, and to a certain extent faunistically.

While most of the birds from Kano, Zinder, and Damergu agree best with the Senegal forms, this is also the case with the majority of Asben birds, but the occurrence of such specialised forms as *Ortyxelos meiffreni* from the Senegal to Darfur and Kordofan, the discovery of *Caprimulgus eximius* and *Calendula dunni* as far west as Zinder are, among others, proofs of this continual Sudanese fauna. On the other hand, many forms are different east and west, sometimes widely, sometimes very little, though distinguishable. A stepping-stone between our knowledge of the birds of Asben to Kano and those from the "Anglo-Egyptian Sudan" are the discoveries of Capt. Lynes, the results of which are, however, except descriptions of a few novelties, not yet published, and who is now making a second collection in Darfur. The temporary French occupation of Tibesti, under Col. Tilho, has not yielded any zoological fruits.

Capt. Buchanan sailed from England early in November, and landed at Lagos, whence he proceeded by railway to Kano. Near Kano, mostly in the

village of Farniso north of Kano, he stayed and collected from December 3 to January 8. Kano is about 1,700 feet high, and the dry season had commenced before he arrived there. From 9. i. 1920 to January 22 he travelled northwards over the 140 miles to Zinder, where he camped until February 20 (Pl. I.). The journey was mostly through open bush country, interspersed with barren, sandy tracks. Zinder was the richest place for birds where he collected during the expedition, many birds appearing, for example, on the wells of Baban Tubki (Pl. I.). The Zinder country is generally called Damagarim, and is from 1,500 to 1,640 feet high. North of Zinder is a barren belt, 25 to 30 miles wide, undulating in places with low-rounded rises, sandy or covered (in the dry season) with withered grass, and often outcrops of gravel, boulders and rocks, in places some scraggy bush and an odd tree. Near Kaleloua a 20-miles-wide belt of fairly thick bush, chiefly acacias, is passed, to be followed by a 50-miles-wide barren belt. Takukut (Takoukout) in Damergu was reached on March 6, and collections were made until March 27. From south of Takukut to north of Aderbissinat extends a bush belt of fairly scattered dwarf acacias, of elevations from 1,500 to 1,800 feet. This bush belt is about 75 miles wide, and *the only place where ostriches are found nowadays in these countries*. The 93½ miles to Agades are waterless desert, there being water only in the well at Abellama.

Agades, the French garrison and administrative capital of Aïr (Asben), 1,710 feet above the sea, was reached on April 11, and the traveller stayed there 11 days. Agades, however, lies not yet in the mountains of Asben, though in the far distant in the north smoke-blue hills are visible on the horizon. The foothills can be reached in half a day from Agades, but the great mountain ranges commence only near Aouderas and Baguezan, when range upon range are in view in a long ragged line across the northern front (Pls. II., III., IV.). The typical brown-grey rock-country of Asben is entered south of Aouderas and Baguezan at Azzal, 1,825 feet above the sea. At Arra, in the southern foothills of Mount Baguezan, Buchanan stayed from May 1 to May 5, and on Mount Baguezan, the highest point of which is 6,050 feet high, he stayed at an elevation of 5,200 feet from May 8 to June 6. It had been a rainless dry season, but a few light rains began to fall early in June. This seems to be a land of pebbles and rocks, like lava or the sea-shore, a waterless waste, a desert of rocks, bare of plants and life. Only along the beds of rivulets, which appear like a meandering line of sand through the grey land of pebbles, some tufts of coarse grass and a few stunted acacias are seen, and along the greater river-beds is more vegetation, with doum-palms (*Hyphaene*) and date-palms, acacia bush and "skunk," a bush growing about 6 to 10 feet high, from a distance looking like a strong-leaved willow. Goats eat it, and camels when in need of food; it is evergreen, and has a strong, unpleasant smell. Hausa name "Abisgee."

The summit of Mount Baguezan appears as a great plateau with mount upon mount of gigantic boulders with narrow levels of sand or bare rock. Nearly all the shelf-rock in Asben is in an advanced stage of decay, but the boulders (Pls. VII. and VIII.) are strong and hard. There is besides much rock like lava. Mounts Baguezan, Timia, Agalak, Faodet, and Tamgak may be said to form almost one continuous range. The heights are often of grotesque shape and appear like towers and castles from the distance. At the base of the greater mountain ranges are fertile belts, where acacias and shrubs (particularly the skunk-like smelling bush) grow in fair abundance, and on which the goats and camels used to feed in

the past—for now many large stone-built towns and villages are deserted and dead, except in the southern parts, near Agades. There are small settlements at Timia, Aouderas, and on Mount Baguezan, a few hundred natives in all, otherwise the land north of Agades is in ruins and unpopulated. This is due to the continued attacks by raiders, who come from the north, stealing camels and whatever they can get, and attacking and killing the people who resist. A band of 14 men attacked Timia on June 21, stealing 32 camels and wounding 8 natives, several of whom died. Buchanan reached Timia only a few hours after the fight, just too late to help the inhabitants. These raiders come from far north, from Janet, about south-west of Ghat, in the territory of the Asger (Asdjer, Azkar), and were led by a famous robber named Chebiekee.

At Herouan (2,300 feet) the traveller collected on June 13 and 14; he then returned via Aguellal, at the foot of the Aguellal mountains (Pls. V. and VI.) and stayed at Timia (3,800 feet) June 21–26; from there he returned to Mount Baguezan from July 1 to 3, when the dreary aspect was relieved by some green foliage appearing, resulting from light rains. Collections were made to about 5,200 feet, the highest point being 6,050 feet. At Azzal (1,825 feet), not far from Agades, Buchanan camped from July 12 to 17. In the Aouderas Mountains (2,700 to 4,000 feet) (Pl. IX.) a stay was made from July 22 to August 1, on Mount Tarrouaji August 3 and 4. Here most of the time was occupied with the hunting of the Barbary sheep, at elevations of about 3,000 feet, which is roughly the summit of the range. Here the rainy season had set in fully.

The return journey was now commenced, and a stay made at Tegguidi, where the collector camped at 1,375 feet below the cliff, which towers up to 1,710 feet at its top. From Tegguidi to Agades is the only place where *Passer simplex* was noticed. A stay was again made at Aderbissinat, 1,525 feet, 93½ miles south of Agades, where large, lake-like temporary ponds of water had collected from the heavy rains, frequented by a good many waterfowl and waders. From September 3 to 5 Buchanan stayed at Tanout, 1,800 feet, south of Damergu, and from there travelled rapidly southwards to Kano.

While the traveller had always been in splendid health, he was attacked by malarial fever during the rains, on his return journey, from which he was still suffering for some months in England.

While the winter was absolutely dry, some slight showers fell in June, soon followed by green foliage, but the rainy season began in the middle of July and lasted throughout August, ending in September. Water in Asben is gained from deep wells; permanent surface water exists only in three places, so far as could be ascertained, one being a deep pool near Aouderas. The year 1920 was exceptionally good for rain, while the foregoing years were terrible, in 1919 rain falling on two days only.

Buchanan was most kindly received, and assisted in every possible way, by the French officers in Zinder, Damergu, and Agades. Unfortunately the insecurity in Asben obliged the authorities to insist on a guard of Tuareg soldiers accompanying him on his journey to the northern parts of Asben, and he was only allowed to stay a very short time in some of the places.

Capt. Buchanan obtained skins of 168 species. In a country which, to a great extent, is desert and therefore poor in animal life, and considering that he also collected as many lepidoptera and mammalia as possible, this is a very fine collection. He believes that he got almost every resident bird in Asben, except

two, a large falcon (probably *Falco biarmicus abyssinicus*) and a large eagle with white on rump or base of tail. But of the 168 species, apart from migrants from Europe, only 65 were from Asben proper, of which we are sure or must assume that they are breeding resident birds. They are the following: *Numida galeata galeata*, *Pterocles lichtensteinii targius*, *Burhinus capensis affinis*, *Streptopelia senegalensis senegalensis*, *S. roseogr. roseogrisca*, *S. turtur hoggara*, *Oena capensis*, *Columba livia targia*, *Necrosyrtes mon. monachus*, *Neophron perc. percnopterus*, *Gyps rüpp. rüppellii*, *Clamator jacobinus pica*, *Chrysococcyx caprius chrysochlorus*, *Lophoceros erythr. erthrorhynchus* (only in the south), *Mesopicos goertae goertae*, *Dendropicos minutus*, *Coracias abyssinus minor*, *Upupa epops somalensis*, *Merops orientalis viridissimus*, *Colius macrourus syntactus*, *Lybius vieilloti frater*, *Trachyphonus margar. margaritatus*, *Pogoniulus chrysoconus schubotzi*, *Scoptelus aterrimus cryptostictus*, *Caprimulgus inornatus*, *Apus murinus brehmorum* (?), *Apus affinis galilejensis*, *Riparia obsoleta buchanani*, *Oenanthe leucopyga aegra*, *Crateropus fulvus buchanani*, *Cercotrichas podobe*, *Agrobates galactotes minor*, *Cercomela melanura airensis*, *Hippolais pallida reiseri*, *Spiloptila clamans*, *Eremomela flaviventer alexandri*, *Hedydipna platyura platyura*, *Nectarinia pulchella aegra*, *Remiz punctifrons*, *Batis senegalensis*, *Lanius excubitor leucopygos*, *Nilais afer afer*, *Pycnonotus barbatus arsinoe*, *Anthus sordidus asbenicus*, *Alaemon alaudipes alaudipes*, *Galerida cristata alexandri*, *Ammomanes deserti mya*, *Ammomanes phoenicurus arenicolor*, *Eremopterix leucotis melanocephala*, *Erem. frontalis frontalis*, *Emberiza striolata sahari*, *Passer simplex saharae*, *P. luteus*, *P. griseus griseus*, *Serinus leucopygius riggenbachi*, *Erythrospiza githaginea zedlitzii*, *Ploceus luteolus luteolus*, *P. vitell. vitellinus*, *Aidemosyne cant. cantans*, *Estrilda senegala brunneiceps*, *Sprco pulcher pulcher*, *Lamprocolius chalybeus hartlaubi*, *Corvus albus*, *C. corax ruficollis*, *C. rhipidurus*.

As will be seen at a glance by anyone acquainted with the distribution of birds in Africa, by far the majority of these forms are inhabitants of tropical Africa. The greater part have evidently found their way to Asben from Nigeria, and agree fully with the Senegalese forms, or those from Hausaland, when they differ, as for example *Pogoniulus chrysoconus schubotzi*, *Scoptelus aterrimus cryptostictus*, *Galerida cristata alexandri*. Others, however, have hitherto only been known from North-East Africa, as, for example, *Spiloptila clamans*, *Remiz punctifrons*, *Corvus rhipidurus*, and others found in Zinder and Damergu. Of still greater interest are those birds which must have reached Asben from the north, viz. *Oenanthe leucopyga aegra*, *Hippolais pallida reiseri*, *Alaemon alaudipes alaudipes*, *Ammomanes deserti mya* (?), *Emberiza striolata sahari*, *Passer simplex saharae*, *Erythrospiza githaginea zedlitzii*, *Corvus corax ruficollis*, which Asben has in common with the Algerian Sahara, a palaearctic country, and *Pterocles lichtensteinii targius*, *Streptopelia turtur hoggara*, *Columba livia targia*, hitherto only known from the Hoggar Mountains.

As not a single specimen had ever been collected in Asben, Damergu, and Zinder, every skin from there was of the greatest interest. Also the collection from Kano is valuable to us, as practically nothing has been known from there except my own meagre notes and specimens, very meagre indeed owing to my severe illness (malaria) and other hindering circumstances; Boyd Alexander did not collect near Kano, but passed through Katschena on his journey to Lake Chad.

The migrants obtained are also of interest, but we know still of certain species

passing through the Western Sahara and not yet found in the Sudan south of the latter, such as *Streptopelia turtur arenicola* for example. Only 4 forms appear to be peculiar to Asben: *Riparia obsoleta buchanani*, *Crateropus fulvus buchanani*, *Cercomela melanura airensis*, *Anthus sordidus asbenicus*. From such a remote place, far away from all explored portions of Africa, I should have expected more peculiar forms. The reason that there are so few is probably the connecting highway through Zinder and Damergu to Hausaland, which has mostly more or less vegetation, there being only a comparatively narrow bare belt.

Probably also this part, and indeed the whole of the Sahara, has been waterless desert before the arrival of many of the species inhabiting it at present, while the former bird population may have died out when the desiccation became serious. Though I do not deny that the desiccation of the Sahara continues even now, I am convinced that it has in the main been a desert long before historical times.

During my study of Buchanan's bird collection the following recent works have been more especially of value to me: Osear Neumann's list of the birds of the western Senegal Colony, and Selater and Praed's list of the birds of the Anglo-Egyptian Sudan. Among others I have had occasion specially to use Claude Grant's articles, Zedlitz's reviews of many African groups, Neumann's critical and detailed articles, Lynes's description of new birds from Darfur, and Wettstein's notes on Kordofan birds. Doubtless the results of Lynes's second expedition to Darfur, when worked out together with his first collection, will greatly increase our knowledge of Sudanese birds.

A great desideratum is still the exploration of the country north of the Senegal, and, though of less importance, that south of the Moroccan Atlas.

1. *Struthio camelus camelus* L.

Struthio Camelus Linnaeus, *Syst. Nat.* ed. x. i. p. 155 (1758—"habitat in Syria, Arabia, Lybia, Africa." Restricted terra typica North Africa, from quotations and designation of Rothschild, *Bull. B.O. Club*, xxxix. p. 83).

♂ ad., Damergu, 3.ix.1920. "Iris light stone-grey. Bill dull pale whitish yellow, nostrils and corners of mouth full dull pink. Feet whitish cream-yellow with pinkish tint. Length of neck and body 88 in., tarsus 24 (?), weight 274 lb."

This is a very fine adult male; the tarsus measures in the skin 455 mm., bill 140 mm. It is only in Damergu, i.e. in a bush belt, about 80 miles wide, of scattered dwarf acacias between Tanout and Tessalatin, that ostriches are found. The food in the dry season is chiefly a leguminose shrub, about 18 in. high, with yellow flowers and flat transversely ribbed pods, which grows, though not abundantly, on bare sand. It is a species of *Cassia* near *obovata*. Hausa name Filusko. Next to it the juicy leaves of *Oxystelma bornouense* (*Asclepiadaceae*), a slender creeper that climbs to the topmost branches of the acacias. Hausa name Hanwin Rago. Other food plants of the ostrich are a species of *Cucumis* (Hausa name Gurji or Gurji kwantal, "a common ground-creeping gourd"), and *Maerua rigida* (*Capparidaceae*), a small tree with white flowers, called by the Hausas Chichiwa. Hausa name Simmina.

2. *Numida galeata galeata* Pall.

Numida galeata Pallas, *Spicil. Zool.* i. fasc. iv. pp. 13, 15 (1767—name given to the domesticated guinea-fowl of Europe and America).

(*Numida meleagris* auctorum, nec Linnaeus! Linné named the bird described in detail by Hasselquist, *Iter Palaestinum*, pp. 274–278, 1757. The name *meleagris* cannot possibly be accepted for the West African common guinea-fowl now domesticated in Europe and other countries, because it is clear that it is that of the species hitherto called *ptilorhyncha*. Hasselquist clearly described the round white spots changing to narrow bars at the base of the neck, and the bristles at the base of the bill, and not the obvious bluish grey-brown collar across the crop region; moreover he described it from a specimen brought to Cairo by Nubian traders, together with monkeys and parrots. Advocates of “nomina conservanda” will probably say the “well-known” name of *meleagris* must be preserved for our domesticated guinea-fowl; but as it obviously was not meant for it, nomenclature would become a mockery if we continue its erroneous use, and the domesticated species must be called *Numida galeata*.)

Nos. 342, 343, 344 ♂♀♀, Zinder, 9.ii.1920.

Nos. 577, 598 ♂♀, Mt. Bagnezan, 5,200 feet, 11, 17.v.1920.

“Length, 18½ to 20½ in. Top of head medium brown, sides of head pale whitish cobalt blue, wattles red. Iris dark brown. Bill brown of various shades, tip pale. Feet black, joints of scales generally pale brown.”—(A. B.) Also observed near Aderbissinat in August, south of Aguella in June, and near Aouderas in July. Hausa name Labo.

There is no constant difference between these birds, nor between them and our series from Senegambia. *N. galeata* is common in Hausaland in wooded districts, while on the Lower Niger the Angola-Gabun form *N. galeata marcheii* occurs, which is larger and has a darker and more bluish crop region with more or less developed whitish cross-bars.

3. *Francolinus clappertoni clappertoni* Children.

Francolinus Clappertoni Children, Denham & Clapperton's *Narr. Trav. & Discov. North & Central Afr.*, append. p. 198 (1826—no locality stated. The specimens were evidently never labelled. The Francolin doubtless came from northern Bornu or northern Hausaland. To say that Bornu must be the exact locality is impossible. Grant did this because on p. 320 it is said that “very large partridges” are found in Bornu, but there is no indication that the type of *F. clappertoni* was shot there).

♀ jun., nearly full grown, juv. about half grown, Zinder, 5, 9.ii.1920.

♂♀ ad., Takukut, Damergu, 21, 26.iii.1920.

“Iris dark brown, bare space round eyes fairly deep pink. Bill and ‘eere’ (space round nostrils) dull black, edge of nostrils and corner of mouth slightly pink. Feet ♂ dull black, legs behind and soles tinted with pinkish; ♀ deep bright black, underlain with reddish, particularly on back of tarsus.”

These specimens are interesting as coming not far from the original locality of the species. So far no specimens except the type were available from there, until Boyd Alexander collected a few from various places near Lake Chad.

There appears to be no difference between birds from Hausa and Bornu and those of Kordofan. The former have more often buff spots, in addition to

the submarginal lines to the feathers of the interscapulium, but this difference is not constant. *F. clappertoni heuglini* and *gedgei* are well distinguishable from *F.c. clappertoni*, but very close to each other, *F.c. sharpei* from Abyssinia is still more distinct and considered as a species by some authors. (Cf. Selater and Praed, *Ibis*, 1920, pp. 844-846).

4. *Pterocles senegalensis senegalensis* Licht.

Pterocles senegalensis Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 64 (1823—"Senegamb., Aegypt., Nubia").

Pterocles exustus Temminck, 1825.

♂ ad., Abellama, south of Asben, 14.viii.1920. "Iris dark, eyelid pale whitish yellow. Bill medium whitish grey, paler yellowish at corner of mouth. Feet dead whitish grey." Length $13\frac{1}{2}$ in.

This specimen agrees perfectly with those from Nubia.

5. *Pterocles lichtensteinii targius* Geyr.

Pterocles lichtensteinii targius Geyr von Schweppenburg, *Orn. Monatsber.* 1916, p. 56 (source of Tahart, northern Tuareg country).

3 ♂ 1 ♀, Mt. Baguezan, Asben, 5,200 feet, May 13, 18, 20, and June 4, 1920. ♂. "Iris very dark umber-brown, eyelid lemon-yellow. Bill dull sienna-brown. Feet dull medium orange-yellow." ♀. Same, but "eyelid whitish yellow."

These birds agree entirely with the specimens collected by Geyr in the north of the Hoggar Mountains, 4 of which were kindly lent me by Prof. Koenig for comparison. These birds differ certainly at a glance from *P. lichtensteinii lichtensteinii* of Nubia (specimens from Suakim in British Museum) by having narrower bars on the upperside and thus appear much less black; the bars on the wings are less white; also the barring of the females is very much narrower, and the ground colour is less whitish, more brownish isabelline, so that it appears altogether more isabelline brownish. With regard to the other forms, I cannot help, for the present, doubting the difference of *abyssinicus* from *P.l. lichtensteinii*. It seems to me that the latter ranges from the Red Sea shores (Nubia) to Abyssinia, and North Somaliland. This was also accepted by Neumann in 1909.

Buchanan found these sandgrouse only on Mt. Baguezan, where they were often flushed from between the boulders on the hill-sides, and were seen flying to water at sun-down.

6. *Ortyxelos meiffreni* (Vieill.).

Turnix Meiffreni Vieillot, *Nouv. Dict. d'Hist. Nat.* xxxv. p. 49 (Senegal).

2 ♂ ad., 3 ♀, 1 ♂ pull., Zinder, January 24 and February, 1920. "Length $4\frac{1}{2}$ - $4\frac{1}{2}$ in. Iris medium umber-brown. Bill various shades of dark brown, in one dull pale yellowish with extreme of upper mandible blackish grey. Feet creamy white."

There is considerable variation among these specimens, 1 male (No. 228) is redder, has more conspicuous buff spots, bordered above by a black line on the scapulars and inner secondaries, and lacks on these parts almost completely the buff edges. Altogether they do not seem to differ from a skin from the Senegal

Colony (Riggenbach) and the skins brought home by Lynes from Darfur. The young bird is in its first feather-garb, and agrees almost exactly with adult birds, except for its much smaller size. Wings, ♂ 73, 75, ♀ 77, 78, 80 mm. The larger size of the ♀ is, judging from Lynes's specimens from Darfur, not constant, as he has females with wings measuring 77 and 79, a male with wings 80 mm. That is assuming that Buchanan's and Lynes's specimens are correctly sexed.

I am inclined to think that the position of *Ortyxelos* with the "Cursors," as adopted by Sharpe and Reichenow, is wrong, and that it is a genus of the *Hemipodii* (*Turnicidae*).

Buchanan says they frequent quiet bush, rise from the grass at one's feet and fly "like a bat in daylight, as if short-sighted," for a short distance before dropping into cover again. Seen singly or in pairs only. An adult bird had small seeds, the young insects in stomach." A ♀ shot 13.ii.1920 had a "half-formed egg."

7. *Otis senegalensis senegalensis* Vieill.

Otis Senegalensis Vieillot, *Tabl. Enc. Méth. Orn.* i. p. 333 (1820—Senegal, in Riocour collection).

♂ ad., Zinder, 1,500 feet, 5.ii.1920. "Iris dark. Upper mandible blackish, cutting edge and lower mandible whitish with pink tinge. Feet cream-white. Length 20½ in. Hausa name, Kadupkurra. Found in open half-desert country, interspersed with dwarf bush and irregular patches of dry grass."

Also found in Hausaland, near Zaria (cf. *Nov. Zool.*, 1915, p. 247).

8. *Eupodotis arabs* (L.).

Otis arabs Linnaeus, *Syst. Nat.* ed. x. i. p. 154 (1758—ex Edwards, who figures, on pl. 12, a specimen from Mocca in Arabia).

♀ ad., Zinder, 1,500 feet, 28.i.1920. "Iris clear cream-white. Bill greyish brown between nostrils and to tip, three-quarters of an inch from extreme lower mandible darkish, remainder of bill dirty white. Feet white, slightly tinged with yellow. Hausa name Toogee or Towgee."

It is at present impossible to define sub-species of this species.

9. *Hydrochelidon leucoptera* (Temm.).

Sterna leucoptera Temminck, *Man. d'Orn.* p. 483 (1815—coasts of Mediterranean).

♂ juv., ♀ juv., Aderbissinat, 1,525 feet, south of Asben, 18, 24.viii.1920. "Iris dark. Bill deep bluish black with faint dull orange at corner of mouth. Feet ♂ medium full darkish sienna-brown, ♀ sienna-brown."

10. *Himantopus himantopus himantopus* (L.).

Charadrius Himantopus Linnaeus, *Syst. Nat.* ed. x. i. p. 151 (1758—"habitat in Europa australiore").

♀, Aderbissinat, south of Asben, 17.viii.1920. "Iris full clear crimson. Bill fairly bright black. Feet medium pale pink."

11. *Tringa glareola* L.

Tringa glareola Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"habitat in Europa").

♂ ♀, Aderbissinat, south of Asben, 19.viii.1920,

12. *Tringa ochropus* L.

Tringa Ochrophus (evidently the "h" misplaced, though in the quotations as well!) Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"habitat in Europa").

♂♂, Farniso, near Kano, 1,700 feet, 26, 29. xii. 1920.

13. *Tringa hypoleucos* L.

Tringa Hypoleucos Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"Europa").

♂, Aderbissinat, south of Asben, 15. viii. 1920.

14. *Philomachus pugnax* (L.).

Tringa Pugnax Linnaeus, *Syst. Nat.* ed. x. i. p. 148 (1758—"Europa." Restricted terra typica Sweden).

♂♀, Aderbissinat, south of Asben, August, 1920.

15. *Sarciophorus tectus tectus* (Bodd.)

Charadrius tectus Boddaert, *Tabl. Pl. Enl.* p. 57 (1783—ex Daubenton, pl. 834, "Pluvier du Sénégal").

2 ♂, 3 ♀, Zinder, 5, 9. ii. 1920. "Iris clear lemon-yellow. Bill crimson except $\frac{3}{8}$ in. extreme which is black. Wattles dull deep pink. Feet medium full purple. Length, $10\frac{1}{4}$ to $10\frac{5}{8}$ in."

There is no differences between males and females. Wings, ♂ 193, 196, ♀ 187, 193, 202 mm. ! Stupendous variation. The length of 202 must be exceptional, the other (right) wing measuring only 201, while in about 15 specimens from Senegal and East Africa the biggest measure was 199, and that only occurred once, the usual length being 186–196 mm.

"♀, February 9, in breeding condition. ♀, February 5, with fully formed eggs in ovary."

16. *Hoplopterus spinosus* (L.).

Charadrius spinosus Linnaeus, *Syst. Nat.* ed. x. i. p. 151 (1758—"habitat in Aegypto." Ex Hasselquist's "Iter").

♀♀, Aderbissinat, south of Asben, 1,525 feet, 15, 26. viii. 1920. "Iris rich red. Bill deep black. Feet dull deep black." Wings, 194, 199 mm. Length, 11 in.

17. *Burhinus (Oedienemus) capensis maculosus* (Temm.).

Oedienemus maculosus Temminck, *Pl. Col.* 292 (1824—wide distribution given, but specimen from Senegal figured and described).

? *Oedienemus affinis* Rüppell, *Mus. Senckenb.* ii. p. 210 (1837—"Kordofan, Nubien, Abyssinien," but terra typica Red Sea coast of Abyssinia, ex *Syst. Nebers. Vög. N.O. Afr.* pp. 112, 117 !).

♂, Aouderas, central Asben, 2,700 feet, 21. vii. 1920. "Iris clear medium pale lemon-yellow, eyelid lemon-yellow. Bill beyond nostril dull black, remaining portion of a slightly greenish lemon-yellow. Feet pale greenish lemon-yellow."

This bird is very brightly coloured, the black spots on the upperside smaller than in *B. capensis capensis*, abdomen unspotted except along flanks, feet very pale.

Though Reichenow united *affinis* and *maculosus* with *capensis*, he evidently no longer adheres to this opinion, and modern authors distinguish *at least* a northern brighter, lighter, and a southern darker, duller-coloured subspecies. It is, however, difficult to know what the proper name of the pale birds should be. Sclater and Praed (*Ibis*, 1920, p. 802) adopt "Kordofan" as the typical locality of *affinis*, but this is not correct. Though Rüppell said that its distribution was Kordofan, Nubia, and Abyssinia, he had only collected it on the Red Sea coast of Abyssinia (l.c.), and the types in Frankfurt are labelled Abyssinia. Now the figure in *Syst. Nubers. Vög. N.O. Afr.*, pl. 42, seems to me to represent a bird different from the brightly coloured ones from the Senegal, Gambaga, Asben, Upper Nile and White Nile, with which also one from Eritrea agrees.

Zedlitz (*Journ. f. Orn.*, 1910, p. 314) gave a review of the forms of *Oe. capensis*. He examined the "types" of Rüppell, of which one only agrees with Rüppell's plate, the other is, he says, a juvenile bird and looks quite different. He truly says that only the adult bird *which agrees with the plate* can be the type, and he wonders how Rüppell could have designated two different birds as types; it must, however, be pointed out that Rüppell designated no types at all, he not having the modern conception of the importance of type specimens! We can now only accept the Frankfurt birds as his types, but no individual example can with absolute certainty be labelled "type," unless he had only one! The birds in Frankfurt do not have "original" collector's labels; the labels which I found on the specimens when I catalogued the collection thirty years ago were written by the curator Erckel, and only sometimes were still older labels glued under the stands, and those were hardly the original field-labels. In former days the proper identification of the species appeared to be of more importance than the all-important, sacred original label put on the bird by the collector in the field. Collectors who *nowadays* do not attach such labels, but numbers or marks only, are fortunately rare and deserve nothing but the severest criticism.

A specimen in the Tring Museum from Ehanda in South-West Africa is hardly distinguishable from Senegal ones, and is evidently *B. capensis damarensis* (Rehw.), while some from Benguella, on the other hand, seem to agree absolutely with others from South and East Africa, being much darker!

B. c. psammochrous (Rehw.) is synonymous of *maculosus* (and thus perhaps of *affinis*), *csongor* the same as *capensis*. *B. c. dodsoni* (Grant) is lighter than *capensis*, greyer than *maculosus* (*affinis* auct.). *B. c. chrenbergi* (Zedl.) (*Orn. Monatsber.*, 1910, p. 9, *Journ. f. Orn.*, 1910, p. 314) is unknown to me.

18. *Streptopelia senegalensis senegalensis* (L.)

Columba senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 283 (1766—Senegal, ex Brisson).

- 3 ♂, 3 ♀ ad., 1 ♂ immat., Kano and Farniso near Kano, December 1919.
- 2 juv. in first plumage, Timia, northern Asben, 26. vi. 1920.
- 2 ♂ ad., Mt. Baguezan, 5,200 feet, 12, 28. v. 1920.
- ♂ ad., south of Baguezan, 3. v. 1920.

Adults: "Iris very dark umber-brown. Bill and nostrils dull black. Feet medium reddish purple."

In the young in first plumage the upper wing-coverts have brownish-buff margins, the jugular collar is wanting; at first the jugular feathers are sandy grey

with buffy edges, later rufous buff with bluish-grey bases. A ♂ shot 5.xii.1919 is in full moult.

Common near Kano; near Baguezan among the rocks, not rare, common at Baban Tubki near Zinder. On December 19 a nest with 2 eggs was taken near Farniso (Kano) about 3 feet 6 in. above the ground in a low acacia bush, in a clump of trees near village. The eggs are slightly glossy and measure 25.8×14.8 and 26.8×15 mm. An egg taken from the oviduct 23.xii.1919 measures 25.5×20 mm. Hausa name Kutehea, Tuareg Tedabear.

19. *Streptopelia decipiens shelleyi* (Salvad.)

Turtur shelleyi Salvadori, *Cat. B. Brit. Mus.* xxi. p. 419 (1893—Lower Niger?).

3 ♂, 2 ♀, Farniso near Kano, 1,700 feet, December 1919, January 1920. "Iris pale creamy white. Bill with cere black. Feet medium reddish purple." Hausa name Zunqui.

I compared these specimens with the type and sole specimens of *Turtur shelleyi*, in the British Museum, and find them to agree with the latter. This form differs from all the other subspecies of *decipiens* known to me in the colour of the primary coverts, which are bluish grey and not blackish or dark brown! The cheeks are grey, back brownish, narrow outer edges of quills whitish grey, under tail-coverts bluish grey with whitish fringes. Wings, ♂ 181–185, ♀ 171, 177 mm. I measure the left wing of the type specimen 172, the right one 169 mm. This form inhabits also Togo, as Reichenow informs me that Togo specimens have bluish-grey primary coverts and extends to the Senegal Colony.

20. *Streptopelia roseogrisea roseogrisea* (Sund.).

Columba roseogrisea Sundevall, *Krit. om Lcvaill.* p. 54 (1857—Nubia).

4 ♂, 2 ♀, Zinder, 24–30.i.1920. "Iris rich scarlet. Bill black. Feet medium reddish purple." Hausa name Memmacallie.

These birds do not seem to differ from Nubian examples. The coloration of the under wing-coverts varies, being sometimes quite white, more often tinged with grey.

Also observed numerous at Aderbissinat in August, and at Azzal in July. Very common at Zinder. In stomachs millet and small beans.

21. *Streptopelia vinacea vinacea* (Gm.).

(? an subspecies.)

Columba vinacea Gmelin, *Syst. Nat.* i. 2. p. 782 (1789—Senegal. Ex Brisson).

3 ♂, 1 ♀, Farniso near Kano, 31.xii.1919, 1.i.1920. "Iris dark. Bill grey-black. Feet medium full reddish purple." Hausa name Memmacallie, which means having a black crescent on the hind-neck.

These birds are rather long-winged, compared with Senegal specimens. Left wing, ♂ 146, 148, 150, ♀ 140 mm. Possibly with a larger series a larger subspecies might be established, but they seem to be widely spread. At Loko on the Benue they were common.

22. *Streptopelia turtur hoggara* (Geyr).

Turtur turtur hoggara Geyr von Schweppenburg, *Orn. Monatsber.* 1916. p. 59 (Idelès, northern edge of Hoggar Mountains).

2 ♂, 1 ♀, Ifrouan, northern Asben, 2,300 feet, 14.vi.1920. "Iris clear light buffish sienna, bare skin round eye deep purple. Bill brownish black. Feet crimson to pale purple."

Buchanan only found this dove at Ifrouan and observed it chiefly in the tops of the date palms. The chief of Ifrouan informed him that it never occurred south of Tamgak (close to Ifrouan), but was found among the rocks north of Ifrouan. This information is probably quite correct, as the specimens agree with the type of *S. turtur hoggara*. They are really intermediate between *S. t. isabellina* and *arenicola*, but nearer to the former, from which they merely differ in the more or less bluish-grey forehead and crown, and the darker, more greyish-brown, less isabelline, back and rump. Wings, ♂ 175, 168, ♀ 173 mm. The wing of the type of *hoggara* measures 170. Stomach berries.

S. t. hoggara is one of the few birds the stronghold of which seems to be in more northern regions, the majority of the bird population of Asben being that of the Western Sudan.

23. *Oena capensis* (L.)

Columba capensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 286 (1766—Cape of Good Hope. Ex Brisson).

Eight specimens from Farniso near Kano, Zinder, and Mt. Baguezan. A young in first plumage, Zinder, 17.ii.1920. Hausa name Burdu.

In the males the bill is orange-red, in females and young black or blackish. Also observed in the Timia valley in June. Very plentiful at Aderbissinat in August, so many that Buchanan believed them to be in course of migration.

24. *Columba livia targia* Geyr.

Columba livia targia Geyr von Schweppenburg, *Orn. Monatsber.* 1916. p. 58 (Ain Tahart—northern Tuareg Mountains).

6 ♂♀ ad., Timia, 3,800 feet, June, Mt. Baguezan, 5,200 feet, May 1920. "Iris rich madder brown with fine inner circle of cream-colour; eyelids blue-grey, like feathers. Bill black, round nostrils chalk-white. Feet bright red with slight purplish tinge." Tuareg name Elcellookum.

Only seen among the rocks of Timia and Mt. Baguezan, in the Arra hills south of Baguezan and at Aguella. Rock-inhabitant. Feeds on berries of bushes, grain, and a hard-spiked burr.

These birds agree absolutely with *C. l. targia* from the Tuareg Mountains. The rump is blue-grey, not white; the glossy jugular zone is much less in extent than in most *C. l. livia*, though some of the latter are in this respect like *C. l. targia*. Generally *C. l. livia* has a darker breast and abdomen, but not constantly. Resembles more *C. l. intermedia* (India), but the latter is underneath darker, and has much darker upper tail-coverts. Wings, ♂ 208, 213, 220, 221, ♀ 203, 211 mm.

25. *Columba guinea guinea* L.

Columba guinea Linnaeus, *Syst. Nat.* ed. xii. i. p. 282 (1766—"habitat in Africa!" Ex Edwards and Brisson. Descr. ex Edwards. Terra typica "inland parts of Guinea," according to Edwards).

6 ♂ ♀ ad., 2 juv., near Kano, December 1919, and first days of January 1920.

The young have the intercapulum more greyish, the spots on the wings more greyish and less defined, the throat is brownish grey or without hackles. The old birds have the iris "glossy clear, brownish tinted; the bare space around the eyes deep pink; bill dark brownish black, white over nostrils; feet pale dull whitish pink." Hausa name Hasbia.

Very common in Hausaland. Buchanan saw the species as far north as Baban Tubki, near Zinder, but never in Asben proper. Cf. *Nov. Zool.* vol. xxv. pp. 356-359, *Ibis*, 1920, pp. 827, 828.

26. *Treron waalia* (Gm.).

Columba waalia Gmelin, Bruce's *Reisen Innere Afrika*, II., Tus. p. 31 (1791—near Lake Tsana in Abyssinia).

♂ ad., Farniso, near Kano, 1,700 feet, 2.i.1920. "Iris deep rich crimson. Bill pale whitish green. Feet pale straw-yellow."

Buchanan observed these green pigeons plentifully near Kano on his return journey.

27. *Sarkidiornis melanotus* (Penn.).

Anser melanotus Pennant, *Ind. Zool.* p. 12. pl. xi. (1769—Ceylon).

♂ ♀ ad., Aderbissinat, south of Asben, 17, 27.viii.1920. Tuareg name Teukimbub.

Claude Grant (*Ibis*, 1915, p. 72) says that he can appreciate the difference of the African race (*Sarkidiornis africanus* Eyton, 1838), which is "always smaller." Selater and Praed (*Ibis*, 1920, p. 784) also call their African specimens *S. melanotus africanus*, thus indicating that they distinguish them from Indian ones. It seems, however, not to be a fact that African examples are smaller. The wing of the ♂ from Aderbissinat measures 397 mm., that of the ♀, which is always stupendously smaller, 299 mm.

Common on the lakes of northern Hausaland.

28. *Alopochen aegyptiacus* (L.).

Anas aegyptiaca Linnaeus, *Syst. Nat.* ed. xii. i. p. 197 (1766—"habitat in Aegypto").

♀ ad., Aderbissinat, south of Asben, 16.viii.1920. Tuareg name Tehghenem.

29. *Dendrocygna viduata* (L.).

Anas viduata Linnaeus, *Syst. Nat.* ed. xii. i. p. 205 (Columbia, South America).

♂ ♀ ad., Aderbissinat, south of Asben, 19, 20.viii.1920. "Iris dark umber. Bill deep blue-black. Feet clear bluish lead-colour." Both *D. viduata* and *fulva* inhabit South America and Africa, and American and African specimens are indistinguishable! Tuareg name Enud.

30. *Anas querquedula* L.

Anas Querquedula Linnaeus, *Syst. Nat.* ed. x. i. p. 126 (1758—"Europa." Restricted typical locality Sweden).

♂, Aderbissinat, 1,525 feet, south of Asben, 24. viii. 1920. If a male, in full eclipse, but perhaps a ♀ with unusual bright, grey wing. Wing only 188 mm.

The date is remarkable. Can it have migrated south already in August? I suppose it had stayed in Africa throughout the summer.

Common in winter in northern Hausaland.

31. *Bubulcus ibis ibis* (L.).

Ardea Ibis Linnaeus, *Syst. Nat.* ed. x. i. p. 144 (1758—Egypt).

Four specimens from Kano and Zinder, December and January, in non-breeding plumage. Also observed at Aderbissinat. Very common in northern Hausaland, often following cattle and donkeys, catching insects between their feet. Grasshoppers found in stomachs.

32. *Butorides striatus atricapillus* (Afzel.).

Ardea atricapilla Afzelius, *Kongl. Vet.-Akad. nya Handl. Stockholm*, xxv. p. 264 (1804—Sierra Leone).

2 ♂ ad., Aderbissinat, south of Asben, 1,525 feet, 13, 26. viii. 1920. "Iris clear yellow. Bill black with utmost base from nostrils and lores yellow. Feet orange-yellow, brownish on front of tarsus and top of toes."

33. *Ardea melanocephala* Vig. & Children.

Ardea melanocephala Vigors & Children, Denham & Clapperton's *Narr. Trav. & Discov. N. & C. Afr.* App. p. 201 (1826—no locality, but doubtless northern Bornu or northern Hausaland).

♂ ad., Zinder, 10. ii. 1920, 3 juv., near Kano, December 1919. "♂ ad., iris clear yellow, bare skin round eye pale yellow. Bill dark blackish grey, inner two-thirds of lower mandible white tinted with grey." The iris of the young is described as whitish yellow or straw-yellow. Hausa name Zelibie.

The bird shot near Zinder was in virtually waterless dry country. It had two large rats in stomach. The Hausas tell a fable about this heron: it catches snakes by placing its foot in a hole occupied by a snake, then waits until the foot is gripped and well swallowed by the snake. It then extends its toes, thus making a bulge or grapple by which it is able to pull the snake from its lair.

34. *Abdimia abdimii* (Licht.).

Ciconia Abdimii Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 76 (1823—Dongola).

♂, Aderbissinat, 28. viii. 1920. "Iris stone greyish brown."

Was very numerous at the water at Aderbissinat.

35. *Threskiornis aethiopicus aethiopicus* (Lath.).

Tantalus aethiopicus Latham, *Ind. Orn.* ii. p. 706 (1790—"Aethiopia." Ex Bruce, *Trav. Abyssinia*).

♀ juv., Farniso, near Kano, 26. xii. 1919.

Common in northern Hausaland.

36. *Plegadis falcinellus falcinellus* (L.).

Tantalus Falcinellus Linnaeus, *Syst. Nat.*, ed. xii. i. p. 241 (1766—"habitat in Austria, Italia").

♂ ♀ juv., Aderbissinat, south of Asben, 24.viii.1920.

Both these birds have 4 or 5 irregular white patches across the foreneck, evidently albinistic.

37. *Necrosyrtes monachus monachus* (Temm.).

Cathartes monachus Temminck, *Pl. Col.* 222 (1823—Senegal).



NECROSYRTES MONACHUS NEAR KANO.

♀ ad., Tarrouaji Mountains, southern Asben, 5.viii.1920. "Iris very dark amber-brown. Bill and neck and head-skin pale whitish cobalt blue, bill darkening to blackish towards tip. Feet pale whitish cobalt blue grey."

(Needless to say in Temminck's figures the colours of the bare parts are drawn from imagination and all wrong!)

This is the common vulture at Kano, as shown on a photograph. The Hausa name is Angulu. Probably this is also the common vulture of Aderbissinat—though Buchanan is not quite sure that they were the same. The smaller dark vulture seen on Mt. Baguezan was probably a young *Necophron*. An egg taken at Kano 11.xii.1919 has a pale greenish shell if held against the light, and is white with pale rufous-brown blotches covering the thicker end and a few deeper rufous-brown spots. It measures 74×54 mm. Pieces of another egg from the

same locality (8.xii.1919) have bolder, darker patches. Both nests were on tall trees, about middle height.

38. *Neophron percnopterus percnopterus* (L.).

Vultur Perenopterus (doubtless error for *percnopterus*) Linnaeus, *Syst. Nat.* ed. x. i. p. 87 (1758—"habitat in Aegypto").

1 ♂ 2 ♀ ad., Zinder, 2.ii.1920. "Cere and head-skin orange-yellow."

The ♂ is in perfect adult dress, the females still show a few grey-brown feathers in tail and back.

A few were seen at Agades, in April, and it was plentiful on Mt. Baguezan, but never seen south of Zinder proper. A dark vulture seen on Baguezan was doubtless the young of this species, and not *Necrosyrtes*. Hausa name Angulu Fulani.

39. *Gyps rüppellii rüppellii* (Brehm).

Vultur Rüppellii A. Brehm, *Naumannia*, 1852, *Heft* 3, p. 44 (Khartum!).

♀ juv. Mt. Baguezan, Asben, 5,200 feet, 4.vii.1920. "Iris brown. Bill pale whitish green, cere brown-black. Feet medium greenish grey, joints of scales whitish."

Hausa name Miké; Tuareg name Ajehnder. Once observed south of Zinder (Dogo) on the return journey.

Rüppell's vulture has been collected in the western Senegal Colony by Riegenbach. I saw it close by on a dead horse near Sokoto in 1885. The specimen sent is juvenile, looking underneath like a *Gyps fulvus*.

(In Lieutenant C. Jean's book, *Les Touareg du Sud-Est l'Air*, pl. xviii. is a photograph of a large vulture from Air (Asben). It may possibly be a young *G. rüppellii* or *fulvus* (if that occurs there), as it seems too large for *Lophogyps*, and I don't think it can be a *Pseudogyps*.)

40. *Milvus migrans parasitus* (Daud.).

Falco parasitus Daudin, *Traité d'Orn.* ii. p. 150 (1800—South Africa. Ex Levaillant).

♀ ad., Farniso, near Kano, 22.xii.1919. "Iris deep umber-brown. Bill and cere light dull purplish yellow. Feet dull light whitish yellow."

Kites, probably of this subspecies, were observed in numbers south of Abellama and Aderbissinat, catching locusts on the wing; they appeared to be on migration to Buchanan. The first bird seen in Asben was also a dark kite, and many were noticed at Agades 7.viii.1920, though not before.

41. *Melierax musicus neumanni* Hart.

[*Falco musicus* Daudin, *Traité d'Orn.* ii. p. 116 (1800—name for Levaillant's Faucon Chanteur, *Ois. d'Afr.* i. pl. 27); *Falco canorus* Rislaeh, Thunberg's *Diss. Ac.* iii. p. 264 (published 1801, though read in 1799, cf. *Ibis*, 1919, p. 702!).]

Melierax canorus neumanni Hartert, *Vög. pal. Fauna*, ii. p. 1165 (1914—Nubia, etc.).

2 ♀ ad., Farniso, near Kano, 27, 31.xii.1919.

3 ♂, 1 ♀ ad., Zinder, January and February 1920.

1 ♂ in moult, still showing some brown juvenile feathers and 1 ♀ juv., just showing some adult feathers, below and above, Aouderas, Asben, 22, 27.vii.1920.

Adults: "Iris rich deep madder-brown. Bill blue-black, base and cere rich orange-chrome, sometimes almost coral-red. Feet rich orange-chrome, in some from Zinder full coral-red." "Inhabits open bush-country, hunts flying low and often alights on ground from a perch on a tree, to take up some prey. In the stomachs of three specimens grasshoppers were found."

The above specimens are typical *neumanni*, except ♀ No. 109, from Farniso, which may be called intermediate between *neumanni* and *metabates*, while the ♂ in moult from Aouderas (No. 762) is still darker and might be called *metabates*! Also the few feathers of the adult plumage in the ♀ from Aouderas (No. 752) are quite dark. Such specimens that do not agree with the usual appearance of *neumanni* are also found in other countries, while, on the other hand, light-winged examples like *neumanni* are now and then found in the areas of the dark-winged *metabates*. One might therefore be tempted not to separate *neumanni*, but it is a fact that in the more desert-like countries from northern Nigeria and Asben to the Blue Nile and Red Sea province light-winged birds predominate by far, while in the range of *metabates*, i.e. from southern Arabia and Eritrea, Abyssinia, Bahr-el-Ghazal, southern Nigeria, Senegambia to Morocco darker birds are the usual form. Cf. Hartert, *l'ôg. pal. Fauna*, vol. ii. pp. 1164-5, Selater and Praed, *Ibis*, 1919, pp. 701-2.

42. *Gymnogenys typica* (Smith).

Polyboroides typicus Smith, *S. Afric. Quart. Journ.* i. p. 107 (1803—eastern Cape Colony).

♂, Farniso, near Kano, 1,700 feet, 27.xii.1919. "Iris very dark. Bill black, mouth whitish, cere and bare skin round eyes pale whitish coral-pink. Feet pale dull lemon-yellow. Length 23.5 in."

Observed on the water at Aderbissinat in August 1920.

43. *Circus macrourus* (Gm.).

Accipiter macrourus Gmelin, *Nor. Comm. Acad. Petropol.* xv. pro. 1770, p. 439 (1771—"a Woronez abhine ad omnem Tanain occurrit").

♀ ad., Farniso, near Kano, 31.xii.1919.

44. *Micronisus gabar* (Daud.).

Falco gabar Dauden, *Traité d'Orn.* ii. p. 87 (1800—interior of South Africa).

♂♀ ad., 2 ♂ juv., 1 ♀ juv., near Kano, December 1919.

♂ ad., Takukut, Damergu, 19.iii.1920.

♀ ad., melanistic variety ("*Micronisus niger*" auct.) near Kano, 5.i.1920. "Iris of all adults rich deep madder-brown or deepest red, of the young ones clear lemon-yellow."

The melanistic female is not quite so deep black as our specimens from Gabun and elsewhere. There can be no doubt that the so-called *M. niger* is a melanistic variety of *M. gabar*. Cf. *Ibis*, 1919, p. 701. Gray, Schlegel, Kaup, and Pelzeln, and recently Butler, considered the black Gabar a black variety of *M. gabar*, but it was left to Mr. G. F. Archer to prove this to be a fact.

Our material shows a good deal of variation in size and width of barring, and

does not lead to the separation of subspecies. The wings of the adult males measure 194, 196; those of the adult grey female 214; of the black one 211 mm.¹

I do not think that the generic separation of *Micronisus* from *Melierax* is justified: the former has a more graduated tail, and that is all! Doubtless it is a near ally of *Melierax*!

The Hausa name is said to be Chambatu, but the natives do not, of course, properly distinguish the various birds of prey, so that their names necessarily include several species.

45. *Falco chicquera ruficollis* Swains.

Falco ruficollis Swainson, *B. W. Africa* (vol. xxii. of *Natur. Library*) i. pl. ii. p. 107 (1837—"Senegal" mentioned in text, but perhaps not exactly from there. The collections which Swainson studied were apparently partly trade skins, and partly from Sierra Leone. Cf. p. 261 of vol. i.).

2 ♂, 2 ♀, Farniso, near Kano, 5, 9.i. 1920, Zinder, 24.i. 1920. "Iris dark, bare space round eye lemon-yellow. Bill blue-black, paling to pale yellow at base. Cere lemon-yellow. Feet lemon-yellow." One of the females at Farniso was killed with a chicken in its claws.

Extends southwards to at least Zaria in Hausaland.

46. *Accipiter badius spheonurus* (Rüpp.).

Falco (Nisus) spheonurus Rüppell, *Neue Wirbell. Abyss.* p. 42 (1835—Dahlak Is. in Red Sea).

♂ juv., Farniso, near Kano, 23.xii. 1919. Occurs also in Zaria.

47. *Falco biarmicus abyssinicus* Neum.

Falco biarmicus abyssinicus Neumann, *Journ. f. Orn.* 1904, p. 369 (Abyssinia, Shoa, Galla country).

♂, Farniso, near Kano, 2.i. 1920.

A young male, apparently hatched the year before, moulting above and below from the juvenile into the adult garb. *F. b. abyssinicus* occurs in Hausaland.

48. *Falco peregrinus pelegrinoides* Temm.

Falco pelegrinoides Temminck, *Pl. Col.* 479 (1829 or 1830—Nubia).

♀ juv., Aderbissinat, south of Asben, 28.viii. 1920.

In its full juvenile plumage, evidently first year. Geyr v. Schweppenburg obtained specimens as far south as the southern escarpment of the Tassili of the Azger, Tinassinin, etc.

¹ Another black hawk has been described from the Galla country, *Accipiter hilgerti* Erl., *Journ. f. Orn.*, 1904, p. 171, pl. 6. One is tempted to consider this bird a melanistic variety, but this cannot be done from our present knowledge. In proportions and the light markings on tail and wings it agrees only with *Accipiter ovampoensis*, but this species is not known to occur in Gallaland. Moreover Hilgert saw a pair, both alike in colour, but only succeeded in getting the female. This remained the only known specimen at the time, but July 12, 1902, Zapphiro shot a male at Bissidimo in Gallaland, which, except in size, agrees perfectly with the type collected by Hilgert in 1901. Its wing measures 225, tail 165 mm. Apparently *A. hilgerti* is, from this evidence, not a melanistic variety, but a blackish species. Description and figure in the *Journ. f. Orn.* are very good.

49. *Falco tinnunculus tinnunculus* L.

Falco tinnunculus Linnaeus, *Syst. Nat.* ed. x. i. p. 90 (1758—Europe, restricted typical locality Sweden).

4 ♀, 1 ♂, Farniso, near Kano, December and January.

3 ♂, Zinder, January and February.

♂ No. 335, Zinder, 7.ii.1920, is moulting its body plumage on the upperside and jugulum, the feathers of the adult male appearing all over the back, neck, and rump in the juvenile plumage. The ♂♂ Nos. 82, 264, from 25.xii.1919 and 28.i.1920, though fully adult, also moult their body plumage above and below; the new feathers resemble the old, only they are darker, richer, the old ones being paler. The same is the fact with the females Nos. 85 and 175 from Farniso, 26.xii.1919 and 5.i.1920.

The Common Kestrel winters in Hausaland; *F. tinnunculus carlo*, its tropical African subspecies, occurs near Zaria, where *F. t. tinnunculus* also winters.

50. *Bubo africanus cinerascens* Guérin.

[*Strix africana* Temminck, *Pl. Col.* 50 (1821—Cape of Good Hope. Cf. Neumann, *Journ. f. Orn.*, 1914, p. 38).]

Bubo cinerascens Guérin, *Rev. et Mag. Zool.*, 1843, p. 321 (Abyssinia).

1 ♂, 2 ♀ ad., Zinder, 26, 28.i.1920. "Iris very dark brown. Bill blue-black. Toes soiled whitish, claws black." Wings, ♂ 316, ♀ 316, 319 mm.

Hausa name Mogia; Tuareg Goomack. Found in trees near village.

These 3 specimens agree well with each other, being paler on the upperside than South African ones, with a very distinct ferruginous colour, especially on the sides of the feathers of the head and interscapulum. They agree with other North-East African examples. All these are *smaller* and *lighter* than South African true *B. africanus africanus* (*maculosus* of older authors).

The subspecies of *B. africanus* are by no means clear. All recent authors (Erlanger, Neumann, Zedlitz, Schlater and Praed) agree that—apart from the very distinct *milesi* of S. Arabia—two forms are separable, i.e. *B. a. africanus* from South Africa and *B. a. cinerascens* from North-East and North-West Africa. But some doubt exists about the East African birds. Oberholser (*Proc. S.U. Nat. Mus.*, vol. xxviii. p. 856) described as *Asio maculosus amerimnus*, a subspecies ranging from "Natal to German East Africa," which he says is "much paler throughout, as well as generally more ochraceous, and legs, feet, face, and crissum less heavily barred with dusky." This subdivision appears to me quite unnatural. I find South African ones, including birds from Natal, rather large, more brownish, but skins from the Lake district (Lake Kivu, west of Lake Tanganyika, Baraka, collected by Grauer), equally larger, but darker, less ochraceous, and with these agree some few from Benguela and Angola. I could hardly say that a Naivasha specimen (van Someren) differs, while one from Lindi (A. Buchanan leg.) has also the same coloration, but is smaller (wing 313 mm.). On the other hand, skins from the Blue Nile (Capt. S. S. Flower), Sennaar (Loat), Gambaga (Col. Giffard) are the typical *cinerascens*. I would gladly recognise an East African race, if Oberholser's type was not chosen from Natal (Durban), as our Natal skins agree with Cape Colony ones. Two extremely reddish specimens were collected by G. Schrader in Abyssinia (Eritrea), and one from Masindi (Unyoro),

collected by L. M. Seth-Smith, is of the same colour on the upperside, or very little less red, but much less ochraceous on the underside. I suppose Schrader's Eritrean birds are extremes of the "rufous phase" (cf. among others, Selater and Praed, *Ibis*, 1919, p. 679).

I must add that a specimen from the province of Zaria, Hausaland, collected by Poggiolini, does not well agree with the Zinder ones, being darker and having a wing of about 324 mm. It is, however, quite possible that it came from a forest district, where a darker form lives, but the Gambaga bird (Gold Coast Hinterland) is typical *cinerascens*!

51. *Otus leucotis leucotis* (Temm.).

Strix leucotis Temminck, *Pl. Col.*, livr. 3. pl. 16 (1824—Senegal).

♀ ad., Kano, 8.xii.1919. "Iris clear orange-yellow. Bill pale greenish grey." Wing 189 mm.

I am not certain if this owl is correctly placed in the genus *Otus* (*Scops* of older authors).

52. *Glaucidium perlatum* (Vicill.) (? subsp.).

Strix perlata Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. ed.) vii. p. 26 (1817—Senegal).

2 ♂, 1 ♀, Farniso, near Kano, 29.xii.1919, 5, 9.i.1920. "Iris clear lemon-yellow. Bill pale greenish yellow. Feet dull straw-yellow."

These three specimens hardly differ from each other; their heads and entire uppersides are rather pale, the white spots on the head rather small. In view of the stupendous individual variation of this little owl I do not feel justified, without a large series, to separate this form, but they are certainly paler than other specimens, though very closely approached by some from Abyssinia and Senegambia.

53. *Centropus senegalensis senegalensis* (L.).

Cuculus senegalensis Linnaeus, *Syst. Nat.* ed. xii. p. 169 (1766—Senegal).

1 ♂, 3 ♀, Farniso and Kano, December and January. Occurs also in the province of Zaria and on Lake Chad.

54. *Clamator jacobinus pica* (Hempr. & Ehr.).

Cuculus Pica Hemprich & Ehrenberg, *Symb. Phys.* fol. r (1828—Ambukol in Dongola).

3 ♂, 1 ♀, Mt. Baguezan, Asben, 5,200 feet, first week in June 1920. "Iris dark brown. Bill deep black. Feet deep leaden grey with whitish scale-joints."

Seen in numbers at Tebernit, 27.vi.1920. The ♀ 674, shot 4.vi.1920, had an almost fully developed egg in ovary. Stomach of another full of caterpillars. Has a double call: one a sharp "key, key-key," the other a full slow sound, like "chau-chau," twice repeated. Wings, ♂ 156, 156, 161, ♀ 156 mm. See remark in *Nov. Zool.*, 1915, pp. 253, 254. It is a vexed question whether forms should be named which differ only on an average in size. In such cases many specimens cannot be placed without knowledge of the locality. Thus the recognition of such subspecies is of no practical value to the curator of a collection for naming his birds. On the other hand, the placing of the "correct name" on the labels is not the final aim of research, and if it is a fact in nature that in one country

a form reaches larger dimensions (or even longer wings only) than in another, it may be important to emphasise such a fact, and that is certainly very strongly achieved by giving it a name. New names are always noticed and discussed, but one may write long treatises without their being read or considered.

55. *Clamator glandarius* (L.).

Cuculus glandarius Linnaeus, *Syst. Nat.* ed. x. i. p. 111 (1758—"habitat in Africa septentrionali et Europa australi," based on Edwards, who figured and described a specimen from Gibraltar!).

♀, Timbulaga, between Asben and Damergu, 15. viii. 1920. This specimen is in full moult, the old feathers being brown and much worn, new greyish feathers growing on upperside, wings, and tail, white ones on the undersurface.

56. *Chrysococcyx caprius chrysochlorus* Heine.

[*Cuculus caprius* Boddaert, *Tabl. Pl. Enlum.* p. 40 (1783—Cape of Good Hope. Ex Daubenton, *Pl. Enl.* and Montbeillard's text). *Chrysococcyx cupreus* auctorum!]

Chrysococcyx chrysochlorus Heine, *Mus. Hein.* iv. p. 11 (1862—Sennaar! Errore! Probably Senegal).

2 ♂ ad., Aouderas, Asben, 2,700 feet, 31. vii. 1920. "Iris deep brick red; eyelid red. Bill dull brownish black, base of lower mandible paler. Feet dull grey-black." The only two specimens seen by the traveller, in a deep valley in the Amathasa Mountains.

C. H. B. Grant, *Ibis*, 1915, p. 417, has shown correctly that the name for the "Golden Cuckoo" is *C. caprius*, and that there is no such thing as "*C. cupreus* Bodd.," though all authors have copied "*cupreus*" from former writers, either without looking into Boddaert's book at all, or not doing so properly. A new name was given by Shaw, *Mus. Lever.*, p. 157 (1792—locality unknown, but "probably" Africa), for the Emerald Cuckoo, which therefore must be called *Chrysococcyx cypreus*. Messrs. Selater and Praed, *Ibis*, 1919, pp. 644, 645, confused the names, calling the Emerald Cuckoo (*C. smaragdineus* auct.) *C. caprius*, but corrected their mistakes, *Ibis*, 1920, p. 853.

There is a striking difference in size between the Golden Cuckoos of South Africa and those from North-West Africa. It is strange that recent students of African birds have not noticed this. While the wings of South African (Cape Colony, Transvaal) *C. caprius caprius* measure ♂ (10 measured) 118–121, ♀ (only 2 measured) 124–125 mm., those of males from Senegal measure 108–112, very rarely to 115 (25 measured), females 110–117 (5 measured), males from Sierra Leone 108–115 (the latter measurement twice, 10 measured), females 115–117 (5 measured). We have thus ♂ 118–121 against ♂ 108–115, ♀ 124–125 against 110–117 mm., surely sufficient difference for recognition of two races.

Heine's statement of the localities "Sennaar" and "Egypt" is doubtless erroneous, as already stated long ago by Heuglin, for *C. caprius* has never been found north of Fazoglo, and there only by Heuglin, and it does not occur in Sennaar and Nubia! Heine sen., who bought many specimens from dealers, probably got his type of *chrysochlorus* from Verreaux, and it came from the Senegal, not Sennaar!

While the difference between North-West African and South African Golden Cuckoos is so striking, I cannot at present fully go into the question of the East

African and West African (Niger, Angola) forms. All I should like to say is, that a good series from Harrar and neighbourhood (from Zaphiro) are generally intermediate, males wings about 113–118 mm., that most Benguela and Angola examples agree with South African ones, but some from there are smaller. I believe, therefore, that the large form *C. c. caprius* ranges to Angola, where it meets a smaller form, while an intermediate one may occur in middle Africa, east and west. This has already been stated by Heine (*Journ. f. Orn.*, 1863, p. 350), who named the intermediate race *Lamprococcyx chrysites* (type locality Gabun!), but Heine was uncertain about the distribution, and had some wrongly located specimens—evidently from Verreaux.

Another point I have not seen mentioned (without searching the whole literature!) is, that the females are larger, having longer wings and tail, and generally larger bills.

57. *Lophoceros erythrorhynchus erythrorhynchus* (Temm.).

Buceros erythrorhynchus Temminck, *Pl. Col.*, livr. 36, genus *Buceros*, spec. 19 (1823—Senegal).

♂ ♀, Kano, 5, 6. xii. 1919.

♀ in moult, Agades, 22. iv. 1920.

Bills of females entirely sienna-red, except for whitish base, that of male with long black patch on basal half of lower mandible.

Common at Zinder, a few at Agades in April, more numerous at Azzal, just north of Agades, in July, but *no hornbills seen further north.*

58. *Lophoceros nasutus nasutus* (L.).

Buceros nasutus Linnaeus, *Syst. Nat.* ed. xii. i. p. 154 (1766—Senegal. Ex Brisson).

♂ ♀ ad., Kano, December 1919, ♂ ad., Zinder, 24. i. 1920. Hausa name Chilachoa. Common at Zinder.

The males have the distal end of the bill all black, the females mahogany red. In stomach of one many locusts.

These birds are typical *nasutus*, but birds from the Eastern Sudan appear indeed to be larger and thus intermediate between *L. n. nasutus* and *forskalii* of Arabia.

59. *Chizaerhis africana* (Lath.).

Phasianus africanus Latham, *Ind. Orn.* ii. p. 631 (1790—"Africa." I substitute as typical locality Western Senegal Colony).

3 ♂, 1 ♀, Farniso, near Kano, December 1919. "Iris very dark brown. Bill lemon-yellow, in a younger bird black with base of upper and whole lower mandible light dull green. Feet blue-black, in the younger bird brownish black."

Not noticed in Asben. "Crest erected in life." This is a common bird in Hausaland: Kadsena, Rara, Zaria.

60. *Poicephalus senegalus versteri* (Finsch).

Psittacus Versteri Finsch, *Ned. Tijdschr. Dierk.* i. p. xvi. (1863—"Kust van Guinea," rectius Gold Coast, teste Finsch, Papageien. Name ex Goffin MS.).

3 ♂, 1 ♀, near Kano, December and January. "Iris clear yellow. Bill dark bluish or greyish black. Feet blackish."

These birds must undoubtedly be called *versteri*, rather than *P. s. senegalus*, as all have a great amount of orange on the breast, and all over the middle of abdomen. On the other hand, they are not so extensively bright orange as some males from Sierra Leone, in which the orange extends all over the sides of the breast and abdomen, but the extent of the orange varies, in one bird extending even over the under wing-coverts.

Besides the orange colour on the underside, *P. s. versteri* differs also by having a darker green jugular region, but fine adult Senegal examples also show an orange tinge on the breast. The ♀ from Kano has much less orange, and the under tail-coverts are green, not yellow, but the specimen is not fully adult, and therefore it is not certain whether the green under tail-coverts are only a sign of immature age, or also peculiar to fully adult females. A larger series may possibly show that all Hausaland specimens are slightly intermediate, but this is not probable, because the variation is so great.

The true *P. senegalus senegalus* is evidently only found in the western Senegal Colony and southwards to Portuguese Guinea. The birds from Sierra Leone, Togo, etc., are all *versteri*. We have a series from the western Senegal from Rigenbach.

61. *Palaeornis krameri krameri* (Scop.).

Psittacus Krameri Scopoli, *Annus I. Hist.-Nat.* p. 31 (1769—no locality! Neumann accepted Senegal as original locality, because he considers that the description only agrees with females of the Senegal form. It is, therefore, not admissible to quote "Senegal" as terra typica without explanation, as has been done by Selater & Praed, *Ibis*, 1919, p. 675 (more Americanorum et Mathewsi-Iredalei). I should have hesitated to introduce Scopoli's name, which has hitherto always been considered doubtful, but as it has been done by Neumann and Selater & Praed, it may be best to follow their lead and thus to come to a general understanding).

♂ ad., Farniso, near Kano, 16.xii.1919.

2 ♂ juv., Zinder, 16.ii.1920.

♀, Aderbissinat, south of Asben, 26.viii.1920.

♂ ad. "Iris very pale tinged whitish, fine inner ring of greenish grey; eyelid orange-chrome. Bill deep mahogany, lower mandible black."

I cannot separate these birds from Senegal specimens. They have *not* the brighter red bills of *P. k. parvirostris* and Neumann's *centralis*, to which they should belong if that form is separable and extends from Sokoto to the White Nile. I agree with Selater & Praed that it requires confirmation, but I cannot say that our White Nile skins (very worn though they are), collected by Col. Yardley, agree with the Senegal form, but—unless *centralis* is different—would rather unite them with *parvirostris*. More material is required to settle their status.

These parrots were rare at Aderbissinat. At Zinder they frequented date-palm groves, eating dates approaching ripeness.

62. *Mesopicos goertae goertae* (P. L. S. Müll.).

Picus goertae P. L. S. Müller, *Natursyst. Suppl.* p. 91 (1776—Senegal. Ex *Pl. Enl.* 320 and Buffon).

4 ♂, 2 ♀, Kano, December 1919, in beautiful fresh plumage.

4 ♂, 2 ♀, Mt. Baguazan, 5,200 feet, 12 to 29.v.1920. "Iris very dark brown. Bill dull grey-black, paler at base. Feet leaden grey."

Though these specimens have a little more grey on the jugulum than most Senegal examples, I do not think they can be separated from the latter, while, on the other hand, specimens from the more southern parts of Hausaland, the province of Zaria and Loko on the Benue, cannot be separated from the darker race, *M. g. poicephalus* auct., which I prefer to call *centralis* Rehw., extending from the Gambia to the Congo and eastwards to the Victoria Nyanza and Upper White Nile.

There are, since 1900, no less than four reviews of the forms of *M. goertae* ! In 1900 Reichenow (*Orn. Monatsber.*, 1900, p. 58) separates what he calls *M. goertae* (*typicus*), *M. g. poicephalus*, *M. g. abyssinicus*, and *M. g. centralis*. In 1903 (*Orn. Monatsber.* 1903, p. 181), Neumann added *M. g. königi* from the Nile between Atbara and Khartum. In 1904 Neumann (*Journ. f. Orn.*, 1904, p. 396) states that *centralis* cannot be separated from *poicephalus* (as already pointed out by Grant and Sharpe in *Ibis*, 1902). Herein I agree, the reason probably being that Reichenow looked upon *poicephalus* as a paler form than *goertae* (perhaps from insufficient and faded material), while in fact it is a darker bird. Moreover, as it is doubtful whether Swainson's *poicephalus* came from the Senegal, the home of the paler form, or the Gambia, the home of a darker bird, I prefer to adopt Reichenow's name *centralis* for this bird.

In the *Ibis*, 1915, pp. 468, 469, C. B. Grant reviewed these woodpeckers. While I agree that the name *centralis* must be adopted for the form generally called *poicephalus* (for reasons stated above), I separate *königi* and *abyssinicus*, and consider *spodocephalus* a subspecies of *goertae*, not another species.

Finally Sclater & Praed, *Ibis*, 1919, p. 632, have written about these birds. With their views I agree on the whole, but it is in my opinion an error to recognise *poicephalus* and *centralis* as two different forms, all the birds from the Gambia to the Congo and Uganda being the same, and I call them *centralis* because of the uncertainty of the name *poicephalus*; on the other hand, I consider separable, by the characters pointed out by Neumann, *M. g. königi* from Nubia (Berber, Meroë, Nakheila, Atbara, Shendi), the palest race of all.

63. *Dendropicos minutus* (Temm.).

Picus minutus Temminck, *Pl. Col.* 197 (1823—Senegal and coast of Guinea. Restricted terra typica Senegal !)

1 ♂ immat., 3 ♀, Mt. Baguezan, 5,200 feet, 9, 11, 20. v. 1920.

2 ♂, 2 ♀ ad., Takukut, Damergu, 24, 26, 27. iii. 1920. "Iris dark. Bill dark, shading to dull greenish grey on sides of mandibles. Feet greenish grey."

This is one of the rarest woodpeckers, hitherto only known from the Senegal, as the locality White Nile (Des Murs, in Lefebvre's *Voy. en Abyss.*, p. 176) cannot be credited. The occurrence, therefore, in Damergu and Asben is very interesting, but Boyd Alexander had already collected two specimens at Yo, western shore of Lake Chad.

(I do not think that the supposed genera *Dendropicos* and *Mesopicos* can be separated at all ! In that case they would have to be called *Dendropicos*, which appears to be the older name !)

64. *Coracias abyssinus minor* Neum.

Coracias abyssinus minor Neumann, *Journ. f. Orn.* lxx. ii. p. 201 (1917—Lower Senegal Colony).

♀, Farniso, near Kano, 8.i.1920. Wing 167 mm.!

2 ♀, Zinder, 26.i., 7.ii.1920. Wings 163, 166 mm.

♀, Aouderas, Asben, 2,700 feet, 27.vii.1920. Wing about 153 mm. (worn).

The above measurements show already how variable these birds are in the length of their wings. It is, therefore, not quite correct if Neumann says that the Senegal form is "ständig" smaller, but Senegal birds, and those from Gambia, Gambia, Portuguese Guinea, and Nigeria, are generally smaller, the wings of Abyssinian birds ranging from 167 to 177 mm., while most West African ones have wings under or not above 160, but some few range to 164, 165, and 167 mm. The bills are *not* usually smaller. Neumann's nomenclature is, of course, perfectly correct (cf. also *Orn. Monatsber.*, 1915, p. 156). It seems to me doubtful if birds from Nubia are not also small and belong to *C. a. minor*!? The Tuareg (Targi) name is Tehgurgat. In the stomachs were found mostly grasshoppers, and some beetles.

65. *Upupa epops somalensis* Salvin.

Upupa somalensis Salviu, *Cat. B. Brit. Mus.* xvi. p. 13. pl. 1 (1892—Somaliland).

♂, Zinder, 13.ii.1920.

♀, Takukut, Damergu, 1,550 feet, 11.iii.1920.

2 ♂, 1 ♀, Mt. Baguezan, Asben, 5,200 feet, 17, 21, 26.v.1920. "Iris dark, bill dull black, paling slightly to reddish at base. Feet whitish grey."

Hausa name "Kahooloo," meaning "crest."

Hoopoes, undoubtedly of this race, which alone occurs in summer, were observed also at Aouderas and near Timia in June and July. They were very common on Mt. Baguezan. In May caterpillars were found in stomachs, which at that time, after light rain, were very plentiful. In February small crickets filled stomachs.

Neither Claude Grant (*Ibis*, 1915, p. 278) nor Sclater & Praed (*Ibis*, 1919, p. 665) have read my explanations in *Vög. d. pal. Fauna*, part vii. p. 870 (1912). I have again examined the type of *U. senegalensis* Swainson, and I repeat that it is a small *U. epops epops*. Therefore the tropical African Hoopoe must be called *U. e. somalensis*, and not *senegalensis*. The latter name refers to a small ♀ of *U. e. epops*, which is common in Senegambia in winter; *U. intermedia* is a synonym of *somalensis*; *U. butleri* Mad. is *U. e. epops*, like the type of *senegalensis*. Riegenbach sent some *U. e. epops* from the Senegal, but *not somalensis*, of which no specimen seems yet to be known from Senegambia. The white subterminal spots to the crest-feathers vary; they are sometimes obscure in *U. e. epops*, sometimes present in *somalensis*, though rarely. The markings on the quills are variable.

66. *Upupa epops epops* L.

Upupa Epops Linnæus, *Syst. Nat.* ed. x. i. p. 117 (1758—"habitat in Europæ sylvis." Restricted terra typica Sweden).

♂, Kano, 11.xii.1919.

♂, Zinder, 5.ii.1920.

Winter visitors from Europe or Africa Minor.

67. *Merops (Aerops) albicollis albicollis* Vieill.

Merops albicollis Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xiv. p. 15 (1817—Senegal).

5 ♂, 1 ♀, Azzal, just north of Agades, 13. vii. 1920, 1,825 feet. "Iris clear crimson, bill dull black, feet slightly yellowish brown." These birds at first glance look very pale and very blue on the scapulars, secondaries, and rump. They are, however, in worn and faded plumage, and can be perfectly matched by specimens from other countries.

If the large first primary in connection with the long middle rectrices is considered a sufficient generic character, the genus *Aerops* must be used; it is certainly a recognisable genus and much better than many genera now generally used, for example, among the *Fringillidae*, *Muscicapidae* (sensu latiore), *Anatidae*, etc.

It is my opinion that the N.E. African form, *M. a. major*, is quite distinguishable. Wings of West African specimens measure about 95–100, those of N.E. African ones 100–108 mm., and as a rule the bills of the latter are much larger.

Buchanan observed also many in Aderbissinat in August.

68. *Merops orientalis viridissimus* Swains.

Merops viridissimus Swainson, *B. W. Africa*, ii. p. 82 (1837—Senegal).

4 ♂, 1 ♀, Takukut, Damergu, 1,550 feet, 8, 12, 19, 22. iii. 1920. "Iris clear rich red. Bill black. Feet whitish with dark greenish grey underlying."

♂ ♀ juv., Timia, Asben, 23. vi. 1920.

♀, Azzal, near Agades, 12. vii. 1920.

Also observed north of Zinder.

At first glance these birds look rather pale, the blue edging to the black jugular bar is rather distinct, and there is a bluish tinge on the abdomen. These peculiarities are, however, due to the somewhat worn and faded plumage in the summer season. (Messrs. Scater & Praed, *Ibis*, 1919, pp. 660, 661, use the specific name "*lamark*" for this bird, and say that I, in 1910, pointed out that this is its oldest name. If they had looked, however, into my *Vög. pal. Fauna*, ii. p. 863, 1912, they would have found that the correct name is *M. orientalis* Lath. 1801, which antedates "*lamark*" by just 20 years.)

69. *Colius macrourus syntactus* (Oberh.).

Urocolius macrourus syntactus Oberholser, *Proc. U.S. Nat. Mus.* xxviii. p. 863 (Abyssinia. Ex Neumann, who, however, did not state fully the differences between the Abyssinian and Senegal race, therefore wisely not bestowing a name on the former).

6 ♂, 2 ♀, 1 doubtful, Zinder, February 1920.

1 ♂, south of Baguezan, Asben, 3,300 feet, 2. v. 1920. "Iris dark reddish umber-brown to deep crimson; bare space around eye dull red, deep purplish crimson, deep crimson. Bill dull deep red to crimson, lower mandible and tip of upper black. Feet dull reddish purple."

A bad specimen of this race was taken by Poggiolini at Niamei on the Upper Niger.

Hausa name Kileoandamma, Targi Asharato.

Also observed in the Timia valley and at Igouloulos on June 11; also at Iferouan and Tabernit. It was common at Agades, and in the ravines south of Baguezan. Buchanan does not think they occur near Kano, as his Kano natives did not know them. In the stomach of one he found green leaves.

It is with some hesitation that I unite the form of *Colius* from Asben and Zinder with the Abyssinian one, but there is no difference whatever between them. On the other hand, they differ from *Colius macrourus macrourus* in being generally paler, the forehead and crown lighter, rump paler, throat and breast lighter and less vinous. The wings measure, ♂ 88-92, ♀ 87, 87 mm. The wings of Senegal birds are often, though not always, much longer.

70. *Haleyon chelicuti eremogiton* subsp. nov.

Haleyon speciei *H. chelicuti* dictae simillimus, sed pallidior, rostro graciliore.

1 ♂, 2 ♀, Zinder, 23.i., 10.ii.1920.

♀, Farniso, near Kano, 2.i.1920.

Type ♀, Zinder, 10.ii.1920, No. 356.

"Iris dark brown. Bill soiled dull sienna reddish with blackish tip." ♀ No. 157, Farniso, is juvenile, the wing-coverts are buff, with blackish centres, the underside (except the entirely white throat and foreneck) buff and more striated than in adult birds. The upper mandible is quite blackish, with only a reddish tinge, merely the basal half of lower mandible being dark reddish.

These birds are nearest to *H. chelicuti chelicuti*, but are distinctly paler on the upperside, especially the scapulars and wing-coverts, and the bill is somewhat slenderer. Wings, ♂ 75, ♀ 81, 76 mm. Bill 36, 37, 37 mm. The blue of the lower back, rump, and upper tail-coverts is paler.

Hitherto all modern authors have united all the *chelicuti* from Abyssinia and Senegal to South Africa. C. H. B. Grant said, "I can see no racial differences between eastern and western, or northern and southern specimens," and Selater & Praed tacitly endorsed this view. Even Neumann hesitated to divide them, as in his list of the birds of the Lower Senegal he called the bird simply binomial "*Haleyon chelicuti*."

Though I cannot follow all the modern splitting of African subspecies, in this case I must admit at least two races. The "typical" form extends from Abyssinia to the western Senegal Colony, where Riggenbach collected over 26 specimens. In the drier districts bordering the desert the paler *eremogiton* lives; besides Buchanan's I have examined one collected by Boyd Alexander at Zogo, near Lake Chad, which agrees absolutely with the Zinder ones, while others from the Shari River, Kopchi, Serikin Kudu, and Gongolo hardly differ, but are a shade darker, and one from Fashoda also closely approaches our specimens, of which, in fact, the Farniso (Kano) one is a little darker than the Zinder ones, on the scapulars and upper back, but this may be due to its being juvenile.

Rather different from *H. chelicuti chelicuti* are the specimens from southern Africa, being larger, having longer wings and heavier, stumper bills, and generally a much darker coloration. Their wings measure 85-79, sometimes only 84, exceptionally 81 mm. Southern specimens (South Africa, Transvaal, Angola) have wings of 82-88, sometimes only 81 mm.

East African birds, and those from the Lake districts (Kivu, Tanganyika, etc.) are very dark, but sometimes larger, sometimes smaller. They may thus

be called intermediate. This has already been pointed out by Reichenow, and others.

Chelicuti Stanl. was described from Chelicut in Abyssinia, *variegata* Vicill. and *striolatus* Licht. from the Senegal, *pygmaea* from Kordofan and E. Abyssinia. All these names must therefore be synonyms of *chelicuti*. The southern bird must be called

***Halcyon chelicuti damarensis* Strickl.**

This bird was also observed on the edge of the water at Aderbissinat in August. Buchanan found *Halcyon chelicuti eremogiton* frequenting shady groups of tall trees and date-palms. In the stomach of one he found grasshoppers.

71. *Lybius vieilloti frater* Neum.

[*Pogonius vieilloti* Leach, *Zool. Misc.* ii. pl. 97 (1815—Africa! Almost surely to have been a *Senegal* skin, or from Gambia; it is therefore a violation of probability to say that it came from Abyssinia, whence birds did not, at that time, come to Europe, except the few from Salt's and Bruce's expeditions. Description and figure are not convincing, as such closely allied forms cannot be separated except by comparing series. Moreover the type of *Pogonius* (not *Pogonias* as quoted!), *vieilloti* appears to have disappeared from the British Museum. I therefore agree with Neumann to accept Senegambia as the typical locality of *P. vieilloti*.]

Lybius vieilloti frater Neumann, *Journ. f. Orn.* 1917. ii. p. 201 (Abyssinia, terra typica Barentu, Upper Baria).

♂ ad., Farniso, near Kano, I. i. 1920.

2 ♀, Zinder, 30. i., 13. ii. 1920.

♂ ♀, Takukut, Damergu, 1,550 feet, 13. iii. 1920.

♀ ?, Timia, Asben, 3,800 feet, 21. vi. 1920 (young bird!).

2 ♂, 2 ♀, Mt. Baguezan, Asben, 3,300 feet, May 1920.

"Iris rich sienna-brown. Bill glossless deep black. Feet greyish black."

If one could judge from a single specimen I would say that the specimen from Farniso (Kano) had larger red spots, and was therefore the Senegal bird, while those from Damergu have smaller ones and must be referred to *L. v. frater* Neum. Probably, however, the Kano bird would also belong to the latter, as the late Boyd Alexander collected it also at Yo on Lake Chad; his specimens also vary somewhat, some having larger spots (like Senegal birds), others very small ones, and the same must also be said of Abyssinian birds. Although the difference of a heavier-spotted Senegal (West African) form and a finer-spotted N.E. African form is admitted by all modern splitters (Ogilvie-Grant, Neumann, Selater & Praed), I must confess that I can hardly separate the two forms, and wish to emphasise that many single specimens cannot be distinguished, though in a series the difference is visible. (The specimen from Zaria belongs already to the Senegal form.)

72. *Trachyphonus margaritatus margaritatus* (Cretzschm.).

Eucco margaritatus Cretzschmar, *Atlas Reise Abess.* p. 30. pl. 20 (1826—Sennaar and east slopes of Abyssinia, terra typica Sennaar).

3 ♂, 3 ♀, Zinder, January and February 1920.

♂ ♀, Timia, Asben, 24. vi. 1920.

"Iris dark brown, umber-brown. Bill dull dark madder-brown, soiled dull reddish brown, medium pale chestnut-brown, tip dark brown or blackish. Feet dull leaden grey."

Tuareg names Agasha and Aghisit-Agur.

Observed in numbers at Agades and near Baguezan in bushes along riverbeds, and in neighbourhood of water. "Has a clear piping prolonged call, also a less shrill 'thuc-thuc-thuc-thuc.'"

I am unable to distinguish these specimens from others from Abyssinia (Eritrea), the Blue Nile (Brehm, Flower), and Nubia (Shendi, Suakim, Port Sudan, Erkowit, etc.).

The wings of the males all reach 97 mm., like some of the north-eastern specimens, while others from there are smaller, sometimes only 88. ♀ wing 92-96 mm.

73. *Pogoniulus chrysoconus schubotzi* (Rehw.).

Barbatula chrysocoma schubotzi Reichenow, *Orn. Monatsber.* 1912, p. 28 (Fort Archambault on the Shari River).

2 ♂, 1 ♀, Timia, Asben, 3,800 feet, 22, 23, 25. v. 1920.

♂, Mt. Baguezan, Asben, 5,200 feet, 31. v. 1920.

"Iris dark umber-brown. Bill black. Feet blackish grey to black."

These specimens agree perfectly with those collected by Boyd Alexander near Lake Chad, and on the Shari River. They have very wide white spots on the upper back, the lower back and rump have much yellow, more lemon-yellow on the latter and upper tail-coverts. The difference from *P. chrysoconus chrysoconus* from the western Senegal (Tiali, Riegenbach leg.) is very slight, but the latter are apparently darker on the back, the white patches being more extended.

P. chrysoconus zedlitzii (Neumann) 1909, Sennaar, Blue Nile, only differs in having the back tinged with orange, and the underside perhaps a little paler.

"*Barbatula chrysocoma pallida*" Wettstein, *Akad. Anz. math. nat. Kl. Akademie, Wien*, p. 131 (1916—Talodi in South Kordofan) is, according to the description and distribution—as *schubotzi* is supposed to range to the Bahr-el-Ghazal—the same as *schubotzi*, if the latter is really different from *zedlitzii* from Sennaar. "*B. c. pallida*" has been compared only with *centralis*, which is much darker, but it should have been compared with *P. c. chrysoconus*, *zedlitzii*, and *schubotzi*! Wettstein says the white spots of the upper back are "reinweiss," which refers to *schubotzi*, but not to *zedlitzii*. So far we must admit *schubotzi* and *zedlitzii* as different, but further material and investigation about the relationship of *chrysoconus*, *schubotzi*, and *zedlitzii* is desirable.

The wings of Buchanan's specimens measure: ♂♂, Timia, 58, 58; ♀ 58.5; ♂, Mt. Baguezan, 58.6 mm.; the latter is the palest of the four.

No other specimens were observed by Buchanan.

(This genus must be called *Pogoniulus*, as *Barbatula* is preoccupied by *Barbatula* Linck., 1790, and *Pogoniulus* has priority over *Xylobucco*. Cf. Richmond, *Proc. U.S. Nat. Mus.* xxxv, p. 634, 1908.)

74. *Scoptelus aterrimus cryptostictus* subsp. nov.

Scoptelus subsp. *S. a. aterrimus* dietae persimilis, sed maris maculis pallidis subterminalibus remigum primariarum minus evolutis, interdum obscuris vel absentibus.

♂ ♀, Mt. Baguezan, Asben, 5,200 feet, 5. vi. 1920.

♂ ♀, Aouderas, Asben, 24. vii. 1920.

♂, Azzal, Asben, 14. vii. 1920.

"Iris dark brown. Bill dull black, corners of mouth yellow. Feet bright black, with white scale-joints."

The males have less-developed pale subterminal spots on the primaries than the Senegal form (*S. a. aterrimus*). In two specimens collected by Boyd Alexander near Yo (on the northern Lake Chad) these pale brown patches are entirely absent, in another exactly as in ours from Asben. The white markings in the middle of the primaries are somewhat variable. The rectrices of our Senegal specimens are, as a rule, without any white spots, but the ♂ from Aouderas has a small white spot at the tip of the outermost tail-feather, as is also found in a male from the Senegal Colony. Adult females have smaller bills and brown throats, and the brown spots near the tips of the primaries are as well developed as in Senegal males, but in a Senegal female they are still larger. The females also have always, or nearly always, white spots near the tips of the outermost primaries. Wings of the Asben birds, ♂ 102, 105, 107, ♀ 98, 98 mm.

Type of *Scoptelus aterrimus cryptostictus*: ♂ ad., Mt. Baguezan, Asben, 5.vi.1920. A. Buchanan leg. No. 678.

This form is evidently spread from Asben to Lake Chad, and the Shari River (Alexander leg.). Buchanan saw it also a little south of Baguezan, at Tebernit on June 27, and at Timia.

75. *Caprimulgus eximius simplicior* subsp. nov.

Caprimulgus eximius speciminibus orientalibus simillimus sed supra minus aurantio-auratus, pallidior isabellinus; caudae fasciis albicantibus frequentioribus.

♂ ad., Zinder, 26.i.1920.

♂ ad., Takukut, Damergu, 25.iii.1920.

"Iris dark. Bill blackish, slightly more brownish at nostrils. Feet medium pale dull blackish grey, edges of scales whitish."

Only these two specimens were found, among dwarf bushes on desert sand. Nightjars were seen in early morning at Aguellal and in Asben, but whether of this or other species could not be ascertained.

These specimens differ from *C. eximius eximius* (specimens from Shendi, White Nile, and Darfur [Lynes leg.] compared) in being less golden orange, slightly duller, paler all over the upperside and wing-coverts, also on the chest; the whitish bars on the rectrices, speckled with black, are more numerous, being 10 or 11 on the middle pair, and only 8 or 9 distinct ones in *C. e. eximius*, therefore being a little closer together.

Type of *C. e. simplicior* ♂, Zinder, 26.i.1920. A. Buchanan leg. No. 244.

The discovery of this beautiful goatsucker so far west extends its distribution very considerably. It has, however, also recently been obtained by Capt. Lynes somewhere in Darfur, and the Darfur specimens agree entirely with those from the Nile. What appears not to have been described before is the very great length of the middle upper tail-coverts, which extend over two-thirds of the tail, to within 3 cm. of its end, and the width of the middle rectrices, *the edges of which are strikingly disintegrated*. Someone will, I fear, make a new generic name for this species, for this reason. The female has the tips to the outer rectrices less wide and buff, not white. The young bird is paler, but not like the Zinder-Damergu birds.

In the volumes of the *Ibis* is now, since the rediscovery of the species on the

White Nile by Witherby (*Ibis*, 1901, p. 259), which was the fifth specimen known, quite a literature on it.

N. C. Rothschild and Wollaston, *Ibis*, 1902, p. 20, found it numerous at Shendi, between Khartum and the Atbara, and collected 15 skins. They gave an excellent account of its habits and the sort of country which it frequents, and also discovered the eggs and pullus!

A. L. Butler gave more particulars about the localities where it has been found, in *Ibis*, 1905, p. 344, and *Ibis*, 1908, p. 239.

C. eximius eximius breeds near Khartum and at Shendi, and has been found at Meroë, on the White and Blue Nile, and in Kordofan and Darfur. According to Butler it also occurs on the Atbara.

76. *Caprimulgus inornatus* Heugl.

Caprimulgus inornatus Heuglin, *Orn. Nordost-Afr.* i. p. 129 (1869—Bogosland).

♂ ad., Tarrouaji, Asben Mountains, 2.viii. 1920.

This specimen is neither of the extreme rufous nor of the quite greyish variety, but rather intermediate. A very reddish example was shot by A. L. Butler near Khartum in May.

(A nightjar different from *C. inornatus* and *eximius* was shot at Aouderas in July, but so much shot to pieces that it was not skinned.)

77. *Tachornis parvus parvus* (Lieht.).

Cypselus parvus Lichtenstein, *Verz. Doubl. Berlin Mus.* p. 58 (1823—N.E. Nubia).

2 ♀, Zinder, 17, 19.ii. 1920. "Iris dark brown. Bill and feet black."

These specimens agree perfectly with a series from Nubia, and another from the western Senegal Colony. In one the throat is perfectly uniform and very little paler than the abdomen, in the other whitish and distinctly striated. Wings of both 129 mm.

I cannot at present discuss all the forms of this species, but it seems to me that *T. p. griseus* must be a synonym, because the wing is the average measure of *T. p. parvus*, and the coloration varies, some Nubian examples being much paler and greyer than others. The longest wings, i.e. 139 and 140 mm., I find in Benguellan examples, which Reichenow unites with his *brachypterus*, the terra typica of which is clouded in darkness. Reichenow first mentions "Gambia" but casts doubt upon the Gambia birds belonging to his "*brachypterus*" with wings of 120–128, or to *T. p. parvus* with wings of "125–132." In any case, the short-winged form is separable, having a darker underside and shorter wings! It inhabits the Gold Coast, Lower Niger, and Fernando Po, Kamerun, but the Mossamedes and Benguellan birds have longer wings again, and lighter underside. The Hausa name is Soysaywa.

78. *Apus murinus brehmorum* Hart. (?).

Apus apus brehmorum Hartert, "Naumann, *Naturg. Vögl. Mitteleuropas*" (sic!) (new edition of Naumann's work), iv. p. 233 (1901—"Südspanien, Madeira, Canaren," type Madeira!).

3 ♂, 5 ♀, Mt. Bagnezan, 5,200 feet, 24, 25.v. 1920.

Large flocks were feeding over acacias. In July such birds were observed at Aouderas, June 27 at Tebernit, June 11 Igouloulouf, June 12 Faodet, June 18

Assode, all in Asben (Aïr). At none of these places, however, were specimens collected.

The identification of these specimens has been a sore trouble. A number of *brehmorum* are not distinguishable from these birds in coloration, but the majority are distinctly darker; on the other hand, darker examples of *A. murinus murinus*, notably one from Jericho, collected by Meinertzhagen—which I think must be *A. m. murinus*—are indistinguishable: it is still evident to me that *brehmorum* and *A. m. murinus* must be distinguished, but their distribution is not yet quite known.

Another question is the size. One of the Baguezan swifts has a wing of 172 mm., while the others have wings of about 162–165, but this can only be said confidently of three, because the others are all moulting! Swifts do not moult in Europe or North Africa by the end of May! Wings of *A. m. brehmorum* measure 168–178, exceptionally under 168 (164) and above (180). There is thus no evidence that the Asben swifts are really smaller. The dates suggest their nesting on Mt. Baguezan.

A similar difficulty confronted me with the Pallid Swifts which I collected in the Algerian Sahara near Guerrara and El-Alia, and two or three shot near Biskra. They were obviously paler than others from North Algeria (Alger, Bône), and North Tunisia. Could it be that *Apus murinus brehmorum* is restricted to the Atlas region and Canary Islands and Madeira, while *A. m. murinus* extends from the Nile through the Sahara to the Mزاب country? Unfortunately I have not seen a swift from Tripoli!

79. *Apus affinis galilejensis* (Antin.).

Cypselus Galilejensis Antinori, *Naumannia*, 1855, p. 307 (Lake of Galilee).

♂, Farniso, near Kano, 25. xii. 1919.

1 ♂, 2 ♀, Mt. Baguezan, Asben, 5,200 feet, 25. v., 1. vi. 1920.

At Mt. Baguezan seen among large flocks of *Apus murinus*. On February 24 many were seen over the town of Zinder, but not obtained.

Hausa name Bulo bulo, which name is also applied to bats!

I cannot separate these birds from *A. a. galilejensis* from Persia, Palestine, Marocco, Algeria, and Tunisia. On the other hand, specimens formerly received from Zaria are not separable from tropical African (Niger, Gold Coast, Sierra Leone) *A. a. affinis*!

80. *Hirundo daurica domicella* Finsch & Hartl.

Hirundo domicella Finsch & Hartlaub, *Vög. Ostaf.* p. 140 (1870—Casamanze).

♀ ad., Farniso, near Kano, 7. i. 1920. "Iris dark. Bill and feet black." Wing 116 mm.

It is not without hesitation that I treat this swallow as a subspecies of *H. daurica*, but after all I see no other choice. It most certainly cannot be treated as a species, as it is merely a smaller form of *H. melanocrissus* from Abyssinia; the latter, however, shows faint striulations on the throat, and thus only differs from some specimens of *H. daurica rufula* in having the rump and shorter upper tail-coverts of the same colour, while they are altogether paler and merging into whitish isabelline on the tail.

The Hausa name given to Buchanan is Saysaywa. This is a rare form in collections. The late W. A. Forbes obtained it at Shonga on the Niger, Giffard and Alexander near Gambaga.

81. *Riparia obsoleta buchanani* subsp. nov.

Riparia formae *R. obsoleta obsoleta* dictae non dissimilis, sed minor, rostro minore, alis brevioribus, colore supra et infra saturatiore, obscuriore, corporis lateribus griseo-brunneis. Subspeciei *R. rupestris spatzi* dictae similis, sed minor, alis brevioribus, abdomine brunnescentiore.

♂♂ ♀♀, Mt. Baguezan, 5,200 feet, 8, 9, 22, 27. v. 1920.

♂♂, south of Baguezan, Asben, 3,300 feet, 2, 3. v. 1920.

"Iris very dark. Bill black. Feet blackish, slightly tinged with flesh colour."

Not observed before approaching Baguezan, but afterwards seen, though not obtained, at Iberkom June 13, Aguellal June 16, Assode June 18 (1), Timia June 9, at Aouderas in July, and July 8 at Agades, where they nest in the fort. At Baguezan frequenting steep cliffs.

These rock-swallows are in colour between the tropical *rufigula* and allies, and *R. obs. obsoleta*. The upperside is almost sooty brown, but fresh feathers are more cinereous. Chin and throat unspotted, more isabelline than in *obsoleta*, abdomen darker greyish isabelline, flanks brownish grey. Under tail-coverts brownish grey with buff fringes, not very much darker than in *obsoleta*. Wings, ♂ 112–115, ♀ 110–113 mm., in *obsoleta* 116–124 (113 given by me as rarely occurring, but no skin at Tring measures less than 116).

Type of *R. o. buchanani*, ♂, Mt. Baguezan, 27. v. 1920. A. Buchanan leg. No. 643.

I found it—like Geyr with his *spatzi* from the foot of the Hoggar Mountains—very difficult to decide where to place this new form. I think, however, that it is a near ally of *R. spatzi*, described as *R. rupestris spatzi* by Geyr, and which I look upon as a dark *obsoleta* form. As *rupestris* and *obsoleta* breed together in western Asia (notably Palestine and evidently Persia), I consider them, like recent observers in Palestine, as two species, and we may look upon *R. fuligula* and *anderssoni* as forms of *rupestris*, *rufigula* (which is also found in Angola!) as a subspecies of *obsoleta*. This, however, is only hypothetical. Another as yet undescribed form has been discovered by Lynes in Darfur.

The specimens of *R. o. buchanani* are not in the best of plumage; they were evidently obtained just after the nesting season, and are beginning to moult: now and then an inner primary or a secondary, some tail-feathers and a few body plumes, on back and breast.

83. *Phoenicurus phoenicurus phoenicurus* (L.).

Molacilla Phoenicurus Linnaeus, *Syst. Nat.* ed. x. p. 187 (1758—"habitat in Europa." Restricted terra typica Sweden).

♂, Farniso, near Kano, 2. i. 1920.

2 ♂, Zinder, 23. i., 10. ii. 1920.

3 ♀, Mt. Baguezan, 5,200 feet, 11, 29. v. 1920.

The males from Kano and Zinder—undoubtedly in their winter quarters—are in beautiful plumage. In one from Zinder the white edges to the throat feathers have mostly disappeared, so that the throat is almost quite black, the

white forehead is also already conspicuous. As redstarts have not very often been recorded from western Africa, the fact that they winter south of the Sahara is of interest.

The occurrence on Mt. Baguezan, in shady glades with tall acacias but no undergrowth, in the middle and end of May is unexpected. The three females are in much-worn plumage, like birds shot in Europe at the same dates, the one from May 29 being worst. I think these birds would have remained in Asben and would not have returned to Europe. Geyr found also redstarts in the desert, near Temassinin, May 12, near Aïn Taïba, May 24, 25, and 26, the latter in feeble condition !

83. *Oenanthe oenanthe oenanthe* (L.).

Motacilla Oenanthe Linnaeus, *Syst. Nat.* ed. x. p. 186 (1758—"Europa." Restricted terra typica Sweden).

♂, Agades, 15.iv.1920.

♂♂♀, Zinder, 23.i., 19.ii.1920.

♂♂, Kano, 3.xii.1919.

One of the males from Zinder is a beautiful old bird. The other is a first year's bird with an unusually rufous upperside and moulting body plumage on breast and back on January 23. The collector could not determine its sex, but the entirely black lores and ear-coverts (though some of the latter have small rufous tips) show it to be a male. The fresh growing feathers on the back are not grey, but brownish. The fine adult male, shot February 19, is just finishing its moult on the breast. The ♀ from Zinder also moults a few feathers on the breast and head. In the Kano and Agades specimens I find no moult, but the latter looks rather worn for the time of the year.

Buchanan says wheatears were common at Baban Tubki, near Zinder, and at Kano, but rare at Agades.

84. *Oenanthe hispanica melanoleuca* (Güld.).

Muscicapa melanoleuca Gùldenstädt, *Nov. Comm. Petrop.* xix. p. 468, pl. 15 (1775—Georgia in the Caucasus).

♂ ad., Zinder, 5.ii.1920.

This specimen has the upperside white with only a rusty buff tinge on the back, its feathers are much worn, especially the upper tail-coverts; the remiges, including the inner edges, are entirely black. The bird is purer black and white than old males shot in March and April, and thus much whiter than usual winter specimens. There is no moult.

The locality is very interesting. Though extending in winter to the eastern Sudan, it is not known from the western Sudan. Only one other specimen (presumably of this form) was noticed at Zinder, none elsewhere.

85. *Oenanthe leucopyga aegra* Hart.

Oenanthe leucopyga aegra Hartert, *Nov. Zool.* xx. p. 55 (1913—Algerian Sahara, type Gara Klima, near Ouargla).

3 ♂, 3 ♀, Agades, 12, 13, 22.iv.1920.

♂ juv., Aouderas, 24.vii.1920.

1 ♂, 2 ♀, 1 ♂ juv., Mt. Baguezan, 5,200 feet, 10, 27.v., 2.vii.1920.

"Iris very dark brown, bill and feet black." The young ♂, July 24 (No. 756), with wings and tail only two-thirds grown, has the bill "pale whitish yellow, except over basal half of upper mandible, which is brown. Feet medium pale leaden brown." Plentiful at Agades, observed on the cliffs of Tegguidi.

These specimens belong to the western form: wings, ♂ 100-103, ♀ 94-97 mm.

The young birds have, of course, black heads. Of the adult ones 4 have the whole crown pure white; 1 (No. 644) has some white feathers on the nape and sides of crown, one of them just growing—the wings of this bird, a ♂, are browner than those of the white-crowned birds! Another ♂ (No. 505) has *one* growing white feather at the nape—its wings are also a little brownish! Three have entirely black heads and distinctly brownish wings, especially wing-coverts. Conclusion (already arrived at from series collected in northern Sahara): the white crown is only found in fully adult birds, young birds have always black heads, but specimens with black crowns breed sometimes. Probably aged birds always get white crowns in *O. l. acgra*, but of *O. l. leucopyga* I have examined fully aged black-headed birds with quite black wings.

Targi name Sin-é Sin-é.

At Aguella a clutch of eggs was found on June 16, 1920. The nest was in a hole in a stone wall of a deserted hut in Aguella village; it was composed of dry grasses and lined with camel's hair. The eggs agree quite with others collected by me in the Oued Mya, Central Sahara. They are white with a hardly perceptible bluish tinge, almost glossless, and are spotted, chiefly near the larger end, with rusty red spots and dots, without underlying blue-grey markings. They measure 20.4×15.3 , 20.2×14.8 , and 20.5×19.7 mm.

86. *Cercomela melanura airensis* subsp. nov.

Cercomela subsp. *C. m. lypura* dictae affinis, sed notaeo pallidiore, fere arenicolore, necnon gastraeo brunnescente luteolo distinguenda.

4 ♂, 3 ♀, Mt. Baguezan, 5,200 feet, 8, 10, 14, 20, 22. v. 1920.

2 ♂, south of Baguezan, Asben, 3,300 feet, 1. v. 1920. "Iris very dark brown. Bill dull black or brown-black. Feet bright black."

♂♀ ad.: Upperside uniform light cinnamon-brown, almost sand-colour, very different from the darker, more fawn-colour, or drab of *C. melanura lypura*, upper tail-coverts and tail brownish black. Ear-coverts brighter, more glossy rufescent brown. Chin and throat dirty white, rest of undersurface brownish buff, middle of abdomen more whitish, under tail-coverts clearer and brighter, the longest sometimes with longitudinal black patches. Under wing-coverts and axillaries buffy white. Wing-feathers dark brown, outer webs margined with colour of back, inner with buffish brown. Wing, ♂ 79-82.5, ♀ 74.5-76.5 mm. Type, ♂ ad., Mt. Baguezan, 14. v. 1920. No. 594, A. Buchanan leg.

This is a very distinct form, but possibly the form from the Nile in Nubia—one specimen collected by N. C. Rothschild & Wollaston between Merowe and Obu Hamed, at Dakfala—is different again, being intermediate between *airensis* and *lypura*; this question must remain unsolved until a series is available.

Cercomela is so closely allied to *Oenanthe* as to be hardly separable!

Buchanan observed this bird also at Tebernit, June 27, at the base of the Tamgak Mountains, June 13, and at Timia in June, but never farther south. He found it frequenting the sides of ravines, among rocks, often perching on bushes.

They often uttered a pleasant broken warble, at times chirped like an English house sparrow.

87. *Myrmecocichla aethiops buchanani* Rothsch.

Myrmecocichla buchanani Rothschild, *Bull. B.O. Club*, xli. p. 33 (1920—"Damergou and Zinder, south to Kano in northern Nigeria").

2 ♂, 2 ♀, Takukut, Damergu, 13.iii.1920.

3 ♂, 1 ♀, Zinder, 27.i.1920.

2 ♂, 1 ♂ juv., Farniso, near Kano, 19, 20.xii.1919, 2.i.1920. "Iris dark brown. Bill and feet black."

This new form is closely allied to *M. aethiops aethiops*, but in fresh plumage not so blackish, and the edges to the feathers of the throat and breast are wider and lighter. The sexes do not differ appreciably. Wings, ♂ 110-114, one from Kano 117, ♀ 102-107 mm.; tail 76-79; bill from base 22-24 mm. The young bird has the edges to the feathers of the underside rufous, not whitish brown as in adults, and not confined to throat and breast, but also on the abdomen.

Another very much smaller and browner subspecies, *Myrmecocichla aethiops sudanensis* has been discovered by Lynes in Darfur and western Kordofan. Its bill is very much smaller, about 15-17 mm. (cf. *Bull. B.O. Club*, xli. p. 18, 1920).

One might be tempted to look upon both these forms (*buchanani* and *sudanensis*) as subspecies of *M. formicivora* from South Africa, but in that species the males have the inner series of upper wing-coverts white—the females, however, not.

Nests, according to Buchanan, in holes in sand banks during rains (September, August). No eggs obtained.

88. *Crateropus fulvus buchanani* subsp. nov.

Crateropus formae Crateropus fulvus fulvus dictae simillimus, sed colore pallidiore, minus rufescente, rostroque minore distinguendus.

6 ♂, 2 ♀, Mt. Baguezan, 12.v.-4.vi.1920.

♀, Agades, 21.iv.1920.

♂, Tessalatin, south of Agades, 5.iv.1920.

"Iris umber-brown to clear blackish brown with water-white outer ring. Bill brown-black or black with corners of mouth yellow. Feet pale dull whitish grey-green or pale sage-green." On two labels the iris is described as "glassy white, grey tinted" and "whitish, tinted with stone-grey." "Flight and call exactly like that of a *Colius*" (Buchanan).

These birds were only seen in the places where obtained. They very closely resemble *C. fulvus fulvus* from the Algerian and Tunisian Sahara, but the bill is smaller, slenderer, the back more pale isabelline, less reddish, occiput and crown paler, only the forehead rufous-brown, while in *C. fulvus fulvus* the whole top of the head is rufous-brown, ear-coverts paler. Evidently the iris is also, as a rule, differently coloured, being usually umber to blackish brown. In *C. f. fulvus* the iris, according to books, is brown or rufous-brown, Riggenbach described it as red, and I found it bright red-brown or brown with a whitish outer ring, never blackish brown. However, the iris seems to be variable: Koenig described it as white, and Buchanan marked it in two specimens as whitish and glassy white, tinged grey!

Wings, ♂ 94-97, ♀ 94 mm., in *C. f. fulvus* 95-102!

Type of *C. f. buehanani*, ♂, Mt. Baguexan, 5,200 feet, 4.vi.1920. No. 675.
A. Buchanan leg.

Several May and June specimens moulting rectrices and some body plumage.

89. *Crateropus plebejus anomalus* subsp. nov.

Crateropus, a subspecies typica occipite striato, colore saturatiore, grisescentiore; a subspeciebus reliquis plumis gularibus jugularibusque magis rotundatis, minus apicatis differt; colore supra brunneigriseo, subtus pallidiore, abdomine isabellino.

♂ ad., Farniso, near Kano, 27.xii.1919. No. 100, type of *C. p. anomalus*.
"Iris clear orange-yellow. Bill black. Feet dark brownish black."

This bird agrees perfectly with several males and females in the British Museum collected by the late Boyd Alexander at various places on the River Yo, in eastern and western Bautehi, and at "Danahaga, N. Nigeria." These birds differ much from all other African *Crateropi*, and it was Alexander's intention to describe them as a new species, as shown by a manuscript name on the labels. If all the other forms which are now treated as subspecies of *C. plebejus* are forms of it, then this new form must also be one of them. It is perhaps nearest to *C. p. plebejus*, but differs from the latter at a glance by the dark centres to the feathers being continued over the occiput and hind-neck, while in *C. p. plebejus* they only reach to 6 mm. beyond the eyes. The upperside is darker, more greyish, not so isabelline, the sides of the head are darker, not isabelline, but greyish brown. The dark centres to the feathers become more or less indistinct in the middle of the back. Quills brown, rectrices brown, darkening towards the end. Feathers of throat dark brown, an almost blackish spot near the tip and a buffy white fringe all round, these fringes becoming less whitish on the chest, where, however, the tips of the feathers have a more distinct whitish guttate tip, which is merely indicated on the throat feathers; chin white; abdomen isabelline, flanks and under tail-coverts slightly browner. Under wing-coverts and inner lining of quills from below brownish isabelline. Wing, ♂ 106-116 (type 115), ♀ 109-113, tail type 110, tarsus 33, bill from forehead 12 mm.

Apparently the only specimen Buchanan met with.

90. *Cercotrichas podobe* (P. L. S. Müller).

Turdus Podobe P. L. S. Müller, Linné's *Natursyst. Suppl.* p. 145 (1776—Senegal. Ex Buffon.)

♀ juv., Aouderas, Asben, 23.vii.1920.

♂♀ ad., Zinder, 24.i., 13.ii.1920.

2 ♂, 2 ♀ ad., Takukut, near Damergu, 12, 13, 19.iii.1920.

♂♀ ad.: "Iris dark brown. Bill black. Feet deep brown-black." Juv.:
"Corners of mouth whitish, feet medium blackish leaden grey."

The female has been said to be greyer than the male, but this is not the case: it agrees in colour, but is considerably smaller; wings, ♂ 91, ♀ 84-87 mm. The young agrees in colour of plumage also entirely with the adults.

Found commonly at Azzal and Aouderas, also at Takukut, rare at Zinder.
"Frequenting thickets, mouse-like movements." Broken up insects in stomach.

A widely spread species, from N.E. Africa to Senegal, no subspecies distinguishable, unless one considers *C. melanoptera* a subspecies of *podobe*. The

locality "Dongola" for *C. melanoptera*, where it is said to have been found by Hemprich & Ehrenberg, is probably erroneous—it seems to be restricted to southern Arabia.

91. *Agrobates galactotes minor* (Cab.).

Aedon minor Cabanis, *Mus. Hein.* i. p. 39 (1850—"Abyssinien").

Sylvia oliviae Alexander, *Bull. B.O. Club*, xxiii. p. 15 (1908—Lake Chad).

2 ♂, 2 ♀, Zinder, 24. i. – 12. ii. 1920.

♂, Takukut, Damergu, 26. iii. 1920.

♂ ♀, Agades, 11, 14. iv. 1920.

♂ ♀, Mt. Baguezan, Asben, 19. v., 2. vi. 1920.

♂ ♀, Timia, Asben, 23. vi. 1920.

"Iris dark brown. Bill dark brownish, lower mandible whitish flesh-colour, tip darker. Feet brown of various shades to pale blackish brown."

There are considerable variations in size; wings, ♂ 76–82, ♀ 75–80, if correctly sexed. The coloration varies also, some specimens being redder, darker, others more sandy, paler. This form, formerly only known from N.E. Africa, was discovered by Alexander on Lake Chad, and now its range extends to Air (Asben).

Buchanan found it "frequenting low shrub, flitting from one bush bottom to another." It has "a sweet somewhat thrush-like broken morning song." Besides the localities where specimens were obtained, observed at Iferouan, Ebazouera, and Tebernit. A nest was found in a thick tangle of vines, six feet from the ground, containing young, at Tokede, 5. vii. 1920.

92. *Hypolais pallida reiseri* Hilgert.

Hypolais pallida reiseri Hilgert, *Falco*, 1908 p. 3 (Biskra).

♂ ♀ ad., Mt. Baguezan, 5,200 feet, 12, 22. v. 1920.

♀ juv. ! Aouderas, 24. vii. 1920.

2 ♂, Agades, 11, 14. iv. 1920.

1 ♂, 3 ♀, Zinder, 26. i. – 16. ii. 1920.

♂, Takukut, Damergu, 27. iii. 1920.

"Iris dark brown. Upper mandible dark brown, lower light yellowish. Feet leaden grey to blackish leaden grey. The young bird has the iris umber-brown, upper mandible dull grey-brown, lower greyish white, feet medium pale whitish leaden grey."

Most of these birds are smaller than topotypical *reiseri* from Biskra, Tuggurt, Mraïer, El-Golea, and In-Salah. They doubtless nest in Asben, as suggested by the late dates of the Baguezan birds and shown by the young bird from Aouderas! The Zinder ones might be and most likely are only winter visitors. Oberholser and other American authors and probably Stresemann would separate these birds from *reiseri*, because their wings are mostly shorter, but this is also the case with the Zinder ones.

The ♂ from Asben and Zinder have wings of :

♂, 61.5, 61.5, 63, 63.5, 64.8 mm.; ♀ 60, 62, 62, 62.5.

On the other hand, specimens from the Algerian Sahara (Biskra, Tuggurt, Mraïer, El-Golea, In-Salah) have wings of :

♂, 63.5, 64.5, 65, 65, 66, 66, 66.5, 66.5, 67, 67, 68 mm.; ♀ 62.5, 64.5.

I do not venture to name the tropical form, because with such a small series I think it is quite possible that larger specimens might also occur, and I have a strong suspicion that the Zinder birds are winter visitors, and, if so, probably from the Algerian desert, where they are migratory, arriving in April and leaving apparently in August or early in September.

The first unconscious discoverer of *H. p. reiseri* was H. J. Elwes, who shot a specimen in Biskra, 5.v.1882. But at that time birds were not very seriously compared, and so it was labelled as "*pallida*," which is rather different, and recorded by Dixon in the *Ibis*, 1882, as *opaca*, which is still more strikingly different!

93. *Hypolais icterina* (Vieill.).

Sylvia icterina Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.), xi. p. 194 (1817—).

2 ♂ ad., south of Mt. Baguezan, 3,300 feet, 1, 3.v.1920.

Not observed elsewhere. Must be migrant, of course, notwithstanding the late date.

94. *Sylvia cantillans cantillans* (Pall.).

(*Sylvia subalpina* auct.).

Motacilla cantillans Pallas, *Vroeg's Cat. rais. Coll. Ois., Adumbratiuncula*, p. 4 (1764—Italy!).

1 ♂, 2 ♀, Farniso, near Kano, 23, 27.xii.1919, 1.i.1920.

2 ♀, Zinder, 24.i., 10.ii.1920.

♂ ♀, Damergu, 22.iii.1920.

♀, south of Mt. Baguezan, 3,300 feet, 2.v.1920.

Though the date of the Asben specimen is very late, we may suppose that these birds are only winter visitors in all these places.

In a ♀ from Zinder, No. 350, 10.ii.1920, tail-feathers, primaries, and a few feathers on the back are moulting! ♂ No. 57 from Farniso, 23.xii.1920, evidently in its first year, as shown by its pale rusty edges to the wings, looks more like a female, there being only an indication of the pinkish colour of the ♂ on the underside. The tail is in moult, there being three just-grown new feathers among the rest of much-worn ones.

95. *Sylvia cantillans albistriata* (Brehm.).

Curruca albistriata Brehm, *Vogelfang*, p. 229 (1855—Egypt).

♀, Farniso, near Kano, 5.i.1920.

♂ "♀," Zinder, 23.i., 17.ii.1920.

The ♂ moults body plumage on back, throat, and breast! The supposed ♀ from Zinder must be a ♂, it moults into brick-red on the throat, and into grey on the back! The ♀ from Farniso moults body plumage!

96. *Sylvia communis communis* Lath.

Sylvia communis Latham, *Gen. Syn. Suppl.* i. p. 287 (1787—England).

2 ♂, Farniso, near Kano, 23, 31.xii.1919.

1 ♂, 3 ♀, Zinder, 24.i.—5.ii.1920.

1, Takukut, Damergu, 27.iii.1920.

1 ♀, Mt. Baguezan, 5,200 feet, 9.v.1920.

The ♂ (No. 485) shot March 27 is moulting rectrices and body plumage, the others from December to February are before their moult; the ♀ from May 5 is probably a sick bird that omitted to wander homewards with its kind, though these birds linger behind very late. Geyr observed it May 10–12, in the gardens of Temassinin!

97. *Sylvia hortensis hortensis* (Gm.).

(*Sylvia orphea* auct.).

Molacilla hortensis Gmelin, *Syst. Nat.* i. ii. p. 955 (1789—France and Italy).

1 ♀, Zinder, 26.i.1920.

2 ♂, Agades, 14, 15.iv.1920. "Iris creamy white. Feet greyish black."

Though known to occur in winter in north-eastern Africa (Kordofan, Hota, Zeila, Shendi), this is the first reliable proof of its wintering in western Africa. Geyr observed it as far south as Temassinin.

98. *Acrocephalus scirpaceus scirpaceus* (Herm.).

(*A. streperus streperus* auct.).

Turdus scirpaceus Hermann, *Observ. Zool.*, p. 202 (1804—Alsace).

♀, Zinder, 19.ii.1920.

99. *Phylloscopus bonelli bonelli* (Vieill.).

Sylvia Bonelli Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xxviii. p. 91 (1819—Piémont).

♂, Kano, 3.xii.1919, moulting back.

♂, Farniso, near Kano, 2.i.1920.

♀, Zinder, 10.ii.1920. Moulting on throat.

100. *Spiloptila clamans* (Temm.).

Malurus clamans Temminck, *Pl. Col.* 466 (1828—Nubia, collected by Rüppell).

5 ♂, 4 ♀, Zinder, January and February, 1920.

♂♀, Takukut, Damergu, 11, 24.iii.1920.

2 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 21, 24.v.1920.

"Iris clear yellowish sienna-brown. Upper and extreme tip of lower mandible black, remainder flesh-colour. Feet pale whitish sienna-brown."

Wings of males 47–49, females 44.5–46 mm. Five of the females differ from all the males in having the black spots on the forehead much narrower, but the ♀ from Mt. Baguezan, though having short wing and tail, has them like the males. Among Nubian birds the same variation in the head is observed, both in large and small specimens!

The occurrence so far west of this species, hitherto known only as a north-eastern form, is very interesting. Buchanan observed it also on June 14 at Iferouan, and June 15 at Aguellal. It frequented the lower parts of "underbrush" and tall grass in half sandy desert, singly or in pairs. Moults seem to be irregular, several specimens moulting tail-feathers and body plumage in January and February, others in March and May.

I cannot unite *Spiloptila clamans* with *Apalis*! The rich rump plumage and the sparse thin feathering of *S. clamans* separate it widely.

101. *Prinia mistacea mistacea* Rüpp.

Prinia mistacea Rüppell, *Neue Wirbelt. Abess.* p. 110 (1835—Gondar in Abyssinia).

2 ♂, 1 sex ?, Farniso, near Kano, December 1919, January 1920.

3 ♂, 2 ♀, Zinder, January, February 1920.

"Iris clear sienna or pale clear umber-brown. Bill blackish, basal portion of lower mandible straw-yellow, but quite black in a quite adult ♂ from Kana, and in the February specimens from Zinder. Feet pale brown to pale clear yellowish brown."

I agree with Selater & Praed that the specimens from north-western tropical Africa (Nigeria, Portuguese West Africa, and Senegal !), and also ours from Kano and Zinder, agree with Abyssinian examples, also that the East African *P. m. tenella* and South African *P. m. affinis* are well distinguishable subspecies, but I believe that even more races can be separated.

102. *Eremomela flaviventris alexanderi* Sel. & Praed.

Eremomela flaviventris alexanderi Selater & Praed, *Ibis*, 1918, p. 673 (Upper White Nile to Kordofan and Lake Chad. Type Bara in Kordofan, A. L. Butler leg., British Museum).

3 ♂, 1 ♀, Zinder, 4, 10, 12. ii. 1920.

♀, Takukut, Damergu, 13. iii. 1920.

♂, Mt. Baguezan, Asben, 5,200 feet, 2. vi. 1920.

"Iris brown. Bill dark umber-brown, lower paler. Feet very dark greyish brown."

These birds agree with those from Kordofan. An adult female of *E. f. griscoflava* was obtained by Charles Rothschild & Wollaston at Nakhaila on the Lower Atbara in February 1904.

103. *Eremomela pusilla* Hartl.

Eremomela pusilla Hartlaub, *Syst. Orn. Westafr.* p. 59 (1857—Senegal, Casamanze).

1 ♂ (wing 53 mm.), 1 sex ? (wing 51.5), Farniso, near Kano, 1,700 feet, 22. xii. 1919. "Iris dark umber-brown. Bill brownish, lower mandible pale dull yellow. Feet medium dull greenish dark."

Distributed from the Lower Senegal districts (Thiès, Riggenbach leg.) to the Niger and Lower Benuë, Kamerun and Congo (Leopoldville).

104. *Camaroptera brevicandata chrysocnemis* Zedl.

Camaroptera griseoviridis chrysocnemis Zedlitz, *Journ. f. Orn.* 1911, p. 339 (ex Lichtenstein nomen nudum, 1854—"vom Senegal bis Adamana." Terra typica Senegal).

♂, ♂?, ♀, Farniso, near Kano, 22, 29. xii. 1919.

"♂" ♀, Takukut, Damergu, 12. iii. 1920.

"Iris light or dark brown. Upper mandible dark brown, lower pale. Feet medium or pale brownish straw colour."

Though mentioned as a "nomen nudum" by Lichtenstein in 1854, this form was not described until 1911. The differences, however, were not very clearly stated, and in part contradictory. They are, in fact, very slight,

but the adult *C. b. brevicaudata* has the underside, from the light-grey throat downwards, almost pure white, while in *C. b. chrysocnemis* the underside is less pure white, more or less tinged with buff (even in adults), the sides more greyish or brownish, the throat, as a rule, less grey. In *C. b. brevicaudata* the back is purer ash-grey, while in *chrysocnemis* it remains more tinged with brownish or greenish, even in adults. As already mentioned by Zedlitz (l.c.) a male from Gambaga (Gold Coast hinterland) agrees, in fact, better with *C. b. brevicaudata*, but the sides are less white.

In *Nov. Zool.*, 1920, p. 459, I have explained the nomenclatorial error in Zedlitz's article, i.e. that there is no reason for the somewhat hazardous theory that the type of *brevicaudata* is lost, and that this bird has not yet been re-discovered. In fact, there are Kordofan specimens now in the British Museum, and they are what Zedlitz called *griseoviridis*, i.e. the real *brevicaudata*.

105. *Sylvietta micrura brachyura* Lafr.

Sylvietta brachyura Lafresnaye, *Rev. Zool.*, 1839, p. 258 (Senegambia).

♂, Farniso, near Kano, 1,700 feet, 5.i. 1920.

♀, Zinder, 26.i. 1920.

♂♀, Takukut, Damergu, 24.iii. 1920.

"Iris medium rich brown. Dull grey-black or blackish brown. Feet pale reddish brown."

The specimen from Zinder is in quite fresh plumage and slightly lighter; the feathers become darker when worn.

The reviews of these birds by Zedlitz (*Journ. f. Orn.*, 1916, p. 25) and Sclater & Praed (*Ibis*, 1918, p. 669) are excellent, but their nomenclature requires an alteration: as *S. micrura* (Rüpp.) was described in 1835, the specific name of the group must, of course, be *micrura*, and not *brachyura* (1839).

106. *Cisticola cisticola aridula* With.

Cisticola aridula Witherby, *Bull. B.O. Club*, xi. p. 13 (1900—60 miles south of Khartum on the White Nile).

♂♀, Zinder, 3, 4.ii. 1920.

♂, Takukut, Damergu, 21.iii. 1920.

"Iris umber-brown. Bill dark brown, lower pale. Feet pale brown-tinged skin colour."

I am sorry to say that I cannot agree with Sclater & Praed's conclusions, *Ibis*, 1918, p. 650. I still consider Witherby's *aridula* a subspecies, the darker specimens of which are very near *uropygialis* from West Africa (Gold Coast to Niger, Angola, and eastern Africa), but lighter, while the light specimens are *typical aridula*. This subspecies thus occurs in two variations, a darker and a lighter one. Not only will it be seen that both varieties are found in the same places (Nubia, White Nile), but some are intermediate. Of the three specimens collected by Buchanan, one has much wider black markings, thus looking much darker, the other two are practically as light as a specimen collected at Shendi by N. C. Rothschild and A. F. R. Wollaston, which agrees with the type of *aridula*.

107. *Hedydipna platara platara* (Vicill.).

Cinnyris platyrus Vicillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xxxi. p. 501 (1819—Senegal!).

3 ♂ ad., near Kano, 22. xii. 1919, 1. i. 1920.

2 ♂ ad., Zinder, 12. ii. 1920.

1 ♂ ad., Damergu, 26. iii. 1920.

2 ♂ ad., 1 "♂ juv.," 2 ♀, Agades, 12, 14, 15. iv. 1920.

3 ♀, Mt. Baguezan, Asben, 5,200 feet, May 1920.

Found fairly plentiful at Agades.

In fresh plumage adult females and young males are bright yellow, in old plumage very pale. Females from April 26, May 12 and 14 are moulting from the pale into the bright-yellow underside. One male from Zinder and another from Damergu have a very distinct, though narrow, violet line separating the green jugulum from the dark-yellow breast. As far as I can see *H. platara* and *metallica* do not actually occur together, and in that case the latter would be a subspecies of *platara*. Both, however, are said to be found in Kordofan. Zedlitz discovered a race of *platara* in the Adiabo steppe in N.W. Abyssinia, while *metallica* was found at Tocolai, Ghinda, Sctel, and in Barca.

(The genus *Hedydipna* might as well be suppressed!)

108. *Nectarinia pulchella aegra* subsp. nov.

Nectarinia subspeciei *N. pulchella pulchella* persimilis, sed rostro debiliore, maris macula pectorali plerumque minus splendidiore distinguenda.

♂♀ ad., Agades, Asben, 1,710 feet, 9. vii., 12. iv. 1920.

2 ♂, 2 ♀, Timia, Asben, 3,800 feet, 21. vi. 1920.

2 ♂, 1 ♀, Azzal, Asben, 1,825 feet, 12, 14. vii. 1920.

2 ♂, 1 ♀, Zinder, 23. i., 13. ii. 1920.

♂♀, near Kano, 7. i. 1920.

Targi name Tagachit-Nakowit.

These birds are very similar to *N. pulchella pulchella* from the Senegal, of which we have 22 adult males in full plumage, a few females, and some males in winter plumage, mostly from Thiès, collected by Riggenbach, by having a slightly thinner and as a rule shorter bill, and the red patch on the breast being, as a rule, duller, less bright. Type: ♂ ad., Timia, 21. vi. 1920. No. 688, A. Buchanan leg.

Also noticed at Aouderas.

The males from Zinder are in the female-like dull winter plumage, but two have the long tail feathers, which they do not lose until the next moult; they have always (or nearly so) retained some metallic green feathers on shoulders and upper tail-coverts. The females in off-plumage seem to have a greyish-black throat—I do not think that such birds are young males, at least not always!

Nectarinia pulchella aegra is very closely allied to and requires careful comparison with *N. p. pulchella* from the Senegal. The North-East African form, however, is much more strikingly different, and it is strange that its distinctness has not been noticed before. It has the larger bill of *N. p. pulchella*, the red breast patch is of a still brighter scarlet and generally more extended, the yellow patch on the sides of the chest not dull greenish yellow, but brighter, almost pure yellow. I name this subspecies—

Nectarinia pulchella lucidipectus subsp. nov.

Nectarinia pulchella pectore clariore scarlatino praepectorisque lateribus purius luteis a forma pototypica distinguenda.

Type of subspecies: ♂ ad. Wad Medani, Blue Nile, 25.vii.1909. Stanley S. Flower leg., No. 856, in the Tring Museum.

Other specimens in the Tring Museum are from Barankwa, Blue Nile, and Roseires, both collected by Major S. S. Flower, from the Kobua River, Lake Rudolf, collected by H. J. A. Turner for Col. Meinertzhagen, near the Gelo River, by Oscar Neumann, from Nimule and Gondokora, collected by L. M. Seth-Smith, and Lado, Emin Pasha leg. Also specimens from Lake Stephanie and Lake Abaya, A. Donaldson Smith leg., Kibero on Lake Albert, W. J. Ansorge leg., and a dozen males from Harar, the Kassam River, and another locality in south-eastern Ethiopia, collected by Zaphiro, belong to *N. p. lucidipectus*, though some of Zaphiro's skins are somewhat intermediate and not quite so typical as those from the Blue Nile.

A nest of *N. pulchella aegra*, hanging suspended in an acacia tree, was found at Timia, Asben, June 21. It has the usual longitudinal purse-shape, and is composed of all sorts of dry material, such as fibres, bark, little twigs, spider-webs, and leaves, lined with white and light-grey feathers, evidently of doves. The eggs are very long, with very faint gloss, greyish white with brown and greyish longitudinal blotches and spots, measuring 17.3×10.8 and 17.3×11 mm.

109. *Cinnyris senegalensis senegalensis* (L.).

Certhia senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 186 (1766—Senegal. Ex Brisson).

2 ♂ ad. in full plumage, 4 ♂ juv. or in off-plumage, or in moult, 2 ♀, near Kano, 22.xii.1919–9.i.1920.

Hausa name Makading-Gowdi.

110. *Remiz punctifrons* (Sund.).

Aegithalus punctifrons Sundevall, *Oefv. Vet. Ak. Förh.* vii. 1850 p. 129 (Sennaar).

2 ♂, 1 ♀, Takukut, Damergu, 11, 12, 13.iii.1920.

3 ♂, Mt. Baguezan, Asben, 26.v., 1.vi.1920.

"Iris dark. Bill dark bluish grey-black, edges at month pale blue-grey. Feet blue-grey."

The March specimens are in very much worn plumage, the Asben ones beautiful, though one still moulting remiges and body plumage.

Frequenting thorn bushes in bush country, waterless except for artificial wells.

The specimens agree perfectly with others from the Nile (Shendi), Atbara, and White Nile.

I do not consider it advisable to separate the African Penduline Tits generically. There is no structural difference except the longer first primary. If this alone is admitted as a generic character, then *Lanius minor* must at once be separated from the other shrikes, the sprosser from the nightingale—to quote only two out of numerous other instances.

111. *Batis senegalensis* (L.).

Muscicapa senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 327 (1766—Senegal. Ex Brisson).

1 ♂, 3 ♀, Zinder, 26.1.1920.

1 ♂, 1 ♀, Agades, 14.iv.1920.

1 ♂ juv., Mt. Baguezan, 5,200 feet, 13.v.1920.

1 ♂ juv., Timia, Asben, 3,800 feet, 22.vi.1920.

♂ ♀, "Iris clear bright yellow. Bill and feet black."

Not uncommon at Agades in April, generally in parties of four or five in bush-country far from habitations.

Hansa name Youngkingalla.

(The distinctness of *B. senegalensis togoensis* Neum. requires confirmation.)

112. *Muscicapa striata striata* (Pall.).

Motacilla striata Pallas, *Vroeg's Cat. Verzam. Vogelen, Adumbratiuncula*, p. 3 (1764—Holland).

♂ ad., Mt. Baguezan, 18.v.1920.

This bird belongs to *M. s. striata*, being dark-coloured, though its wing measures 90 mm.

The date is a very late one! Would probably not have returned to Europe. Not seen anywhere else.

113. *Muscicapa albicollis* Temm.

Muscicapa albicollis Temminck, *Man. d'Orn.* p. 100 (1815—new name for *collaris*, which had been anticipated).

♀, Tegguidi, Asben, 12.viii.1920.

The occurrence in Asben is most interesting; we know that the species passes through Algeria on migration, but there has, so far, been no evidence where it went. The date is a very early one! The specimen was "very thin and weak."

114. *Lanius excubitor leucopygos* Hempr. & Ehrh.

Lanius leucopygos Hemprich & Ehrenberg, *Symbolae Physicae* fol. e and fol. dd, description fol. d (1828—Dongola).

1 ♀, Zinder, 2.ii.1920 (lateral rectrices badly worn, moult on breast and throat).

4 ♂, 1 ♀, Mt. Baguezan, 8.v.—3.vi.1920 (plumage more or less worn, two rectrices moulting, 2.vi.1920).

2 ♂, Agades, 17, 20.iv.1920.

"Iris dark brown. Bill black. Feet greyish or brownish black."

Rare at Agades and Zinder, not seen farther south. Wings, ♂ 100–105, ♀ 95–97 mm.

Formerly only known from Nubia, to Kordofan, Blue and White Nile, but collected by Alexander near Lake Chad, and by Poggiolini at Timbuktu.

115. *Lanius senator senator* L.

Lanius Senator Linnaeus, *Syst. Nat.* ed. x. p. 94 (1758—"habitat in Indiis," errore! Typical locality fixed "Rhine," ex Albin—cf. *Vög. pal. Fauna*, i. p. 434).

1 ♂, 3 ♀, near Kano, 8. xii. 1919 to 7. i. 1920.

2 ♂, Zinder, 28. i., 12. ii. 1920.

1 ♂ ad., Mt. Baguezan, 5,200 feet, 24. v. 1920.

♂ juv. Tegguidi, Asben, 12. viii. 1920.

Hausa name Suda.

Notwithstanding the late date of the Baguezan male, and that of the young bird from Tegguidi, I do not for a moment believe that these birds nest in Asben. They evidently migrate southwards rather early—at least some of them. On the other hand, some remain up to a rather late date, mostly never to return to the north in the same year, and they are frequently in bad condition (cf. Geyr, *Journ. f. Orn.*, 1918, p. 142!). The specimens from Kano are in beautiful fresh plumage, with rump, scapulars, and edges to feathers of wings brownish buff, and some are still moulting a few of the feathers on back and breast, as well as outer primaries; also one of the Zinder birds still moults a few body feathers. The young bird has nearly the whole of the outer webs of the second to fourth primaries buff.

116. *Harpoolestes senegalus senegalus* (L.).

Lanius senegalus Linnaeus, *Syst. Nat.* ed. xii. i. p. 137 (1766—Senegal).

"♂ ♀," Kano, 13. xii. 1919.

"Iris medium dark purplish grey. Bill black. Feet pale bluish grey."

Hausa name Suda.

I must still state that I cannot separate the supposed "*pallida*" of Neumann. On the other hand, I do not quite understand Messrs. Selater & Praed's remark, *Ibis*, 1918, p. 637, where they say "that it is impossible to recognise any satisfactory races of this shrike from South, West, or East Africa," and then not only recognise *H. s. habessinica*, *erlangeri*, *remigialis*, and even name a new form—a good one no doubt—*H. s. sudanesis* Sel. & Praed. Certainly these are good subspecies, but *rufofuscus* and others are in my opinion equally distinct.

117. *Laniarius barbarus barbarus* (L.).

Lanius barbarus Linnaeus, *Syst. Nat.* ed. xii. i. p. 137 (1766—Senegal. Ex Brisson).

♂, not quite adult, Farniso, near Kano, 27. xii. 1919. "Iris dark. Bill black. Feet light leaden grey."

This bird has an unusually dark, somewhat brownish yellow crown, and some of the wing-coverts have rust-brown fringes. It is apparently a younger bird, but not, of course, in its first plumage, which is quite different.

118. *Nilaus afer afer* (Lath.).

Lanius Afer Latham, *Ind. Orn. Suppl.* ii. p. xix (1801—Senegal. Ex Gen. *Synops. Suppl.* ii. p. 76!).

2 ♂, 2 ♀, 1 juv., Timia, Asben, 3,800 feet, 22, 23, 25. vi. 1920.

3 ♂, Mt. Baguezan, 5,200 feet, 11, 13, 31. v. 1920.

"Iris dark brown. Bill black, inner half of lower mandible blue-grey. Feet medium leaden-grey."

In all these specimens the wings are faded and worn, but in the ♂ of June 25 the new, more blackish remiges are growing, and several specimens show moult of body plumage.

119. *Prionops plumatus haussarum* subsp. nov.

Prionops formae *P. p. plumatus* dietae persimilis, sed fascia nuchali laterumque capitis lutea vel fere absenti, nec schistacea conspicua distinguendus.

3 ♂, 2 ♀, 1 ?, near Kano, December 1919, January 1920. "Iris and bare orbital ring lemon-yellow. Bill blue-black. Feet medium dull orange-chrome."

Hausa name Kara-dangi.

These birds are clearly different from *P. p. plumatus*, of which we have a good series from the western Senegal Colony, as the more or less incomplete band on the nape and behind the ear-coverts is not dark greyish slate or almost black, but brownish buff and sometimes indistinct or nearly absent. The wings measure 113–126 mm., the largest bird being marked as a female, but possibly by error. The 26 Senegalese specimens do not surpass 123, the majority being under 120 or just 120 mm., it is therefore possible that a larger series from Kano would show a larger maximum or average wing-measure. The little series from Kano all belong, of course, to my new subspecies, but some other birds are also very interesting. Three specimens from the province of Zaria, either near the town of Zaria or northwards, agree entirely with our Kano ones, but another, from the collection of the late Schütt in Freiburg, labelled by the late Schneider from whom we bought it as coming from the "Sudan," agrees with the second whitest of our *haussarum*. Its locality is doubtful, but it can hardly have come from the eastern Sudan. There is also a skin from Ilorin, Nigeria, which approaches our new form, though not the whitest specimens. On the other hand, two specimens from the Kaduna River, south of Zaria, have the dark bands on the head darker and might belong to *P. p. plumatus*, and this is possible, as the Kaduna valley is much richer in vegetation and more fertile than the more open, drier country near Kano.

Type of *P. p. haussarum*, ♂ Farniso, near Kano, 15.xii.1919. No. 44, Angus Buchanan leg.

(Neumann wrote about the specimen labelled "Sudan" in *Journ. f. Orn.*, 1905, p. 219, and I discussed the Hausaland ones in *Nov. Zool.*, 1915, p. 259. I shot a *Prionops* near Loko on the Benue and observed it not far from Zaria, in 1886.)

120. *Pycnonotus barbatus arsinoe* (Licht.).

Turdus Arsinoe Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 39 (1823—"Fayum in Aegypt").

1 ♀, Agades, 12.iv.1920.

2 ♀, Timia, Asben, 22, 23.vi.1920.

1 ♂, Azzal, Asben, 1,825 feet, 16.vii.1920.

2 ♀, Aouderas, Asben, 2,700 feet, 23.vii.1920. "Iris dark umber-brown. Bill black. Feet grey-black." Targi name, Taynut.

Found always in groves of date-palms, rarely among other trees.

It is interesting to find this Nile bird so far west. The heads are browner than in our Nile specimens, but, all Asben examples being in worn plumage, this is probably due to the state of plumage.

121. *Motacilla flava flava* L.

Motacilla flava Linnaeus, *Syst. Nat.* ed. x. i. p. 185 (1758—"habitat in Europa." Restricted typical locality South Sweden!).

♂, near Kano, 7.i.1920. Juv., body plumage in moult.

3 ♂, 2 doubtful, apparently 1 ♂ juv., 1 ♀, Zinder, January, February. The males moulting body plumage, one also inner secondaries and outer reectrices.

1 ♀, Mt. Baguezan, Asben, 19.v.1920; late date, no moult.

122. *Motacilla flava thunbergi* Billberg.

Motacilla Thunbergi Billberg, *Synops. Faunae Scandin.* i. 2, Aves, p. 50 (1828—Lapland).

♂, near Kano, 7.i.1920. Slight moult of body plumage.

♂ ad., Mt. Baguezan, 5,200 feet, 8.v.1920. No moult.

123. *Motacilla alba alba* L.

Motacilla alba Linnaeus, *Syst. Nat.* ed. x. i. p. 185 (1758—"habitat in Europa." Restricted typical locality Sweden).

♀ ad., Takukut, Damergu, 1,550 feet, 8.iii.1920.

124. *Anthus sordidus asbenaicus* Rothsch.

Anthus sordidus as'benaicus Rothschild, *Bull. B.O. Club*, xli. p. 33 (November 1920—Mt. Baguezan).

6 ♂, 4 ♀, Mt. Baguezan, 5,200 feet, 9.v.-5.vi.1920. "Iris dark umber-brown. Bill brown-black, cutting-edges of upper and basal two-thirds of lower pale brown or pale dull straw-colour."

This very distinct local form of *Anthus sordidus* is described as nearest to *A. sordidus hararensis* Neumann from Harar (and northern Somaliland), but more rufescent, especially on the rump and upper tail-coverts, and the chest less spotted and flanks paler; there is also, as a rule, less brown on the inner webs of the tail-feathers, but this last character is somewhat variable. The size is very variable, wings of males measuring 93-100, of females 87-91.5 mm. This form is also somewhat similar to *A. sordidus jebelmarrae* Lynes (*Bull. B.O. Club*, xli. p. 16, from Jebel Marra, Darfur, 6,000 feet), but the latter is of a darker brown on the upperside and darker, more rufous-brown on the underside. A pair before me measure ♂ wing 96, ♀ 89.5 mm.

These pipits were not observed anywhere else than on the Baguezan Mountains. They frequented valleys, often where sandy flats joined stony ground. The ♀ shot on June 5 had "eggs in the ovary."

125. *Anthus campestris campestris* (L.).

Alauda campestris Linnaeus, *Syst. Nat.* ed. x. i. p. 166 (1758—"habitat in Europa." Restricted typical locality South Sweden).

1 ♂, 3 ♀, near Kano, 22.xii.1919-5.i.1920.

3 ♂, 2 ♀, Zinder, 23.i.-13.ii.1920.

Winter visitors. Hausa name "Myshagacomje."

Most specimens still show traces of moult on body plumage, two also moult wing-feathers.

126. *Anthus trivialis trivialis* (L.).

Alauda trivialis Linnaeus, *Syst. Nat.* ed. x. i. p. 166 (1758—"habitat in Succia").

♂ ♀, Zinder, 27. i., 19. ii. 1920.
Winter visitors.

127. *Alaemon alaudipes alaudipes* (Desf.).

Upupa alaudipes Desfontaines, *Mém. de l'Acad.* 1787, p. 504 (Gafsa & Tozer in Tunisia).

♂ ♀ ad., Agades, 21. iv. 1920.
♂, north of Aguellal, 15. vi. 1920.

These specimens have the upperside rather brownish, darker than in most specimens from the northern Sahara of Algeria and Tunisia. A specimen which I shot in the Oued-el-Abiodh north of In-Salah, 14. iv. 1912, one from Gizeh in Egypt, one from Meroë in Nubia (E. & R. Gurney coll.) are, however, absolutely like the Asben ones, and one from near Sidi Okba (near Biskra) comes very close to them in coloration. The question requires attention, for it almost seems as if the southernmost specimens were as a rule darker. Of two May birds from Cape Blanco South (west coast of Sahara), however, one, though terribly worn, is evidently quite pale, and in the Natron Valley in Lower Egypt and Nubia these birds are very variable, sometimes quite greyish, sometimes isabelline.

The only specimen seen north of Agades is the one from Aguellal, in northern Asben. In southern Asben it inhabits the desert between Agades and Tiguéddi.

128. *Galerida cristata alexanderi* Neum.

Galerida cristata alexanderi Neumann, *Bull. B.O. Club*, xxiii. p. 45 (1908—Bautchi in Hausaland).

3 ♂, 3 ♀, near Kano, 13, 26. xii. 1919, 2, 7. i. 1920.
2 ♂, Zinder, 30. i., 10. ii. 1920.
♀, Agades, 16. iv. 1920.
3 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 8, 27, 29. v. 1920.
♂, Aouderas, Asben, 30. vii. 1920.

"Iris dark brown. Bill pale brown, upper mandible darker. Feet pale whitish brown, pale straw-colour, pale yellowish brown."

It is with much hesitation that I unite all these Crested Larks under the name of *G. c. alexanderi*. Those from the neighbourhood of Kano, Zinder, and Agades agree very well with each other, and with the typical specimens from Bautchi and other places in Hausaland—they are all in more or less worn plumage. The three males from Mt. Baguezan are much more cinnamon or rufous, but they are in heavy moult, most of the feathers of the upperside being fresh and even still growing; the female, however, though also heavily in moult, has still many of its old feathers and looks very much like one of the Kano skins. The Aouderas specimen, on the other hand, has quite finished its moult, and looks much paler, not so rufous, as the Baguezan ones, and paler, less brownish, than the worn winter birds. Its feathers have still all the pale sandy, almost greyish edges. Although in some countries, Algeria for example, the forms of *Galerida cristata*

are very constant, while those of *Galerida theklae* are very variable, in other countries, Nile valley and Palestine for example, the *cristata* forms vary much; this is especially demonstrated by the wonderful series collected by Meinertzhagen in Palestine and Syria, and there a similar phenomenon is evident, i.e. that the quite freshly moulted birds are most reddish or cinnamon, those shortly after the moult, with feathers a couple of months or so old, palest, while later on, when the edges to the feathers are worn off, the central dark-brown spots are more exposed, the upperside therefore becoming much darker. The spots on the chest in all Crested Larks are less circumscribed in freshly moulted ones, sharper defined and apparently—not really—smaller in worn birds.

Buchanan gives the Hausa name as "Delà." Except perhaps on Mt. Baguezan he found Crested Larks nowhere common, but only saw isolated pairs or single birds. The female shot near Kano, 13.xii.1919, had "a fully formed egg in ovary." Small insects and seeds were found in the stomachs.

129. *Ammomanes deserti mya* Hart. (?).

Ammomanes deserti mya Hartert, *Ann. & Mag. Nat. Hist.* ser. viii. vol. x. p. 230 (1912—Oued-Mya north of In-Salah, western Sahara).

2 ♂, 5 ♀, Mt. Baguezan, 5,200 feet, 8.v.–2.vii.1920.

1 ♂, south of Baguezan, 3,300 feet, 3.v.1920.

"Iris umber-brown. Bill dull medium lemon-yellow, upper mandible tinged with brown. Feet pale yellowish brown, tinged with white, in the freshly moulted bird medium umber-brown, soiled with white."

♂ No. 723, shot 2.vii.1920, is in beautiful fresh plumage, just through the moult. All the others are much worn, but not yet moulting, except No. 547, shot 3.v.1920, which moults some secondaries and primaries. I cannot confidently separate these birds from *A. d. mya*, which Geyr found throughout the Tuareg Mountains from Kelmet to Ideles. It is true that our birds are generally darker on the upperside, but some Oued-Mya examples can hardly be called different. The one freshly moulted bird agrees so well with examples of *A. deserti algeriensis*, collected by Lord Rothschild and myself on the hills near Biskra by the end of September and early in October, that I cannot separate it, though it cannot be denied that it is darker than most of the latter. A series of unsoiled, freshly moulted birds would be necessary for a separation of the Asben form; without that it would be a risky experiment to name it.

Similar birds were observed (but not collected) near Aouderas in July, and at Aguellal, Aouderas, Faodet, Iberkom, Ifrouan, and Tebernit in June. They frequented level stretches of lava stones and pebbles, and were seen among the huge boulders of the mountains.

A nest was found on Mt. Baguezan, 5,200 feet high, on June 30. It was placed on the sand among a small group of stones, lying on level ground under a projecting rock. The three eggs were in an advanced stage of incubation, and only one could be saved. It agrees with many varieties of the eggs of *Ammomanes deserti algeriensis*, being dirty pinkish white with a ring of brown and underlying greyish spots and a few spots and dots over the rest of the surface. It measures 21×16.8 mm. The nest is like those of *A. d. algeriensis*, and pieces of thread and linen are also present.

130. *Ammomanes phoenicurus arenicolor* (Sundev.)

Alauda arenicolor Sundevall, *Oefr. K. Vet. Akad. Förh.*, Stockholm, 1850, p. 128 (Lower Egypt and Arabia Petraea).

3 ♂, 1 ♀, Agades, 1,700 feet, 16. iv. 1920.

On an average the bills of these birds are rather large, but Algerian specimens match them not rarely. Coloration and size absolutely as in Algerian and other specimens. Plumage worn.

131. "*Calendula*" *dunni pallidior* subsp. nov.

Formae *Calendula dunni dunni* dictae persimilis, sed pallidior.

1 ♂, 1 ♀, 1 ?, Takukut, Damergu, 8, 21. iii. 1920. "Iris dark brown. Bill almost white, upper mandible tinged with brown. Feet creamy white or "very pale whitish skin-colour."

These three specimens are so much like the two adult specimens of *Calendula dunni* in the British Museum (the third is a nestling) that it is not without hesitation that I propose to distinguish them as above. But two of our specimens are much, the female a little paler, less reddish, and the bills certainly less powerful. The wings of the types, marked ♂ and ♀, measure ♂ 85, ♀ 80, our specimens ♂ 80, ♂ (?) 84, ♀ 77 mm. It is, therefore, possible that the form has shorter wings, but more material must be examined. Let us hope that Lynes will come across this species in northern Darfur, and that his specimens will either confirm the difference of the more eastern and more western specimens or show that they vary so much individually that they must be united. *C. dunni* was discovered at the Ogageh Wells in Kordofan.

Type, ♂ ad., Takukut, 21. iii. 1920. No. 459, A. Buchanan leg.

I am by no means sure that these birds should be in the genus *Calendula*. It is true that they agree in structure, i.e. the very thick, high bill, shape of wings, and feet with *Calendula crassirostris*, but the colour is more that of a Crested Lark or *Ammomanes*, and in fact a perfect counterpart of *Mirafra cordofanica*, so that I am in doubt if the *Calendulae* should not be lumped into *Mirafra*, which contains many very different forms.

Buchanan found these birds only in an isolated barren desert stretch, where they were generally seen in pairs.

132. *Calandrella brachydactyla hermonensis* Tristr.

Calandrella hermonensis Tristram, *Proc. Zool. Soc.*, London, 1864, p. 434 (Mt. Hermon and Lebanon).

2 ♂, Agades, 13. iv. 1920.

Probably still on migration, though sometimes eggs are already found in mid-April in the northern Sahara. Geyr observed Short-toed Larks as late as May 13, north of the Ahaggar Mountains, which he considered to be still on migration.

I am sorry to say that we must accept Tristram's name *hermonensis* for the desert form of this species, which has been named *rubiginosa* by Fromholz and ranges from Morocco throughout the northern parts of the Sahara to Egypt and Palestine. It is true that Tristram's specimens were in badly worn breeding plumage, and some juvenile, but a re-examination of his series shows that the

name *hermonensis* must be applied to the more rufescent rufous-headed desert form. On the other hand, some of Tristram's specimens from Lake Huleh in the plains are more like typical *brachydactyla*—possibly the two forms may meet in northern Palestine. Moreover on migration the greyish *C. b. longipennis* occurs in Palestine!

133. *Calandrella brachydactyla longipennis* (Eversm.).

Alauda longipennis Eversmann, *Bull. Soc. Imp. Nat. Moscou*, xxi. p. 219 (1848—Songaria).

♀ ad., Zinder, 2. ii. 1920.

Though we have found this form in small numbers in the Algerian northern Sahara, i.e. even farther west than Zinder, this seems to be the southernmost locality for it in Africa.

134. *Eremopterix leucotis melanocephala* (Licht.).

Alauda melanocephala Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 23 (1823—"E. Nubia et Senegambia!") Restricted terra typica Nubia!).

1 ♂ ad., 1 ♂ in moult, 1 ♀, Zinder, 2. ii. 1920.

1 ♂ juv., 1 ♀, Tegguidi, Asben, 11. viii. 1920.

"Iris dark brown. Bill white, slightly tinged with greyish. Feet pale greyish white, more brownish in female and juv."

In small flocks, mostly on open wind-swept flats.

I have called these birds *E. l. melanocephala*, though this is perhaps not quite correct. As has been noticed by Reichenow, myself, Sclater & Praed, and others, there is much variation in the coloration of the upper wing-coverts, males from the eastern Sudan very often having a black patch on the lesser upper wing-coverts, while this is, as far as I have been able to make out, invariably absent in Senegal specimens. There are, however, specimens from Khartum and Nubia, in which the black patch is entirely absent, and though in the Tring collection they are very much in the minority, they are apparently more frequent in other museums. As I cannot find any other difference between eastern and western birds, I, like others before me, hesitate to give a name to the Senegal form. The old male from Zinder has a black patch, but not so large as in many eastern males, the younger males have no trace of it.

[If we do not separate the Nubian and Senegal birds, there still remain four good races:

1. *E. leucotis leucotis* Stanley (*Loxia leucotis* Stanley, *Salt's Travels in Abyssinia*, Append. p. lx., 1814, "Coasts of Abyssinia"). This is a bird with dark-brown back, black and brown (not white!) lesser wing-coverts, and a moderately strong bill. Hab. Abyssinia (Eritrea to Gedaref—at least our Gedaref specimen is clearly typical *leucotis*).

2. *E. leucotis madaraszi* Rehw. (*Pyrrhulauda leucotis madaraszi* Reichenow, *Orn. Monatsber.*, 1902, p. 78, "Ostafrika"). This form has a larger bill than both *leucotis* and *melanocephala*, otherwise agreeing with *melanocephala*. It inhabits East Africa north to the Galla countries, from where we have a good series.

3. *E. leucotis melanocephala* (Licht.). Upperside, as a rule, lighter than in *E. l. leucotis* and *madaraszi*, lesser upper wing-coverts white. Senegal to Asben

and Hausaland and thence to Nubia, where *leucotis leucotis* is, of course, not found, south to Kudurma (Emin Pasha).

4. *E. leucotis smithi* Bp. Bill still larger than that of *madaraszi*, wings a little longer, otherwise no constant differences. Southern Africa.

All these birds vary to some extent. The variation in the upper wing-coverts in *melanocephala* has already been discussed. Among the *madaraszi* collected in the Galla country by Zapphiro is a male in which the white of the sides of the head encircles the eye.]

135. *Eremopterix frontalis frontalis* (Bp.).

Pyrrhulanda frontalis Bonaparte, *Consp. Gen. Av. i.* p. 512 (1850—Nubia. Ex Lichtenstein MS., in Berlin Mus.).

2 ♂, 1 ♀, Zinder, 2.ii.1920.

2 ♂, 1 ♀, Agades, 1,700 feet, 11, 16, 20.iv.1920.

2 ♂, 2 ♀, Azzal, Asben, 12, 17.vii.1920.

♂♀: "Iris dark brown. Bill greyish white or whitish grey. Feet cream-white, sometimes tinged with brown."

There is much variation in the colour of the upperside in the males; No. 749 from Azzal has the upperside grey with a slight brownish tinge, while No. 730 from the same locality is as brown as those from Agades.

Were found very plentiful at Agades and on the plains to the south of that place, and many were seen flitting in large flocks with undulating flight over the wind-swept flats near Zinder, a few seen near Aouderas and Tebernit. None observed near Baguezan.

Hausa name Gulo gulo tabari; Targi Kusouro.

136. *Emberiza striolata sahari* Levaill.

Emberiza Sahari Levaillant jun., *Expl. Scient. Algérie, Atlas, Ois.*, p. ix. bis, fig. 2 (1850—Algeria accepted as terra typica).

4 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 10-19.v.1920.

3 ♀, Azzal, Asben, 16, 17.vii.1920.

♂, Agades, 22.iv.1920.

♂, Zinder, 2.ii.1920.

"Iris dark brown. Upper mandible dull blackish, lower whitish or yellowish. Feet clear sienna brown, toes a shade darker."

Geyr von Schweppenburg was justly surprised to find the "house-bunting" in the Tuareg Mountains, as he had not come across it south of Ouargla, nor had Hilgert and I found it in El-Golea or in the Tidikelt oases. It is still more surprising to find it in Asben, and even in Zinder! Moreover, the specimens agree well with a large series from Tunisia, Algeria, and Marocco. It is true that all these specimens have a more or less distinctly striolated back, while in Marocco and Algeria some specimens do not show these stripes, but the majority are perfectly similar to the Asben specimens in this and in every other respect. The wings measure 77-81 mm., those of Geyr 78-82; the latter ornithologist remarks that I only gave 75-80, and that was quite correct, but 75 is a rare measurement, and recently collected specimens measure up to 82 mm.

In April and May these birds are already moulting, in Algeria (Biskra) they

appear to moult much later, as those collected end of September and in October were only just through their moult, and some were still moulting on October 4 and 8. Moroccan specimens from May 15 and 18 had not yet any sign of moult.

Buchanan found these birds rather locally, both in the town of Zinder, on the granite rocks near that town, and in the hills north of Agades and Baguezan. They were also seen in great numbers at Igouloulouf and Tebernit.

Hausa name Zcegeegee; Targi Tarayak.

(*Emberiza striolata djebelmarrae* Lynes is a very distinct, much darker subspecies from the Djebel Marra in Darfur.)

137. *Emberiza septemstriata goslingi* ?

2 ♂, Zinder, 2, 16. ii. 1920.

These two birds are still paler than *E. septemstr. goslingi* (*Bull. B.O. Club*, xvi. p. 124, Ubima on the Uelle), but being very much worn it is impossible to be certain about their coloration. A specimen from Gambaga is brighter rufous, but appears to be rather *goslingi* than *E. s. septemstriata*, which has a more blackish throat. As *E. s. goslingi* occurs also in the Bahr-el-Ghazal it is quite possible that both our Zinder specimens and the one from Gambaga belong to it.

138. *Passer simplex saharae* Erl.

Passer simplex saharae Erlanger, *Journ. f. Orn.* 1899, p. 472, pl. 14 (Tunisian Sahara).

2 ♀, Tegguidi, south of Agades, 12. viii. 1920.

2 ♂, 1 ♀, Tilaraderas between Agades and Tegguidi, 10. viii. 1920.

♂ ♀, south of Agades, 21. iv. 1920.

Bill in ♂, April 21, which is moulting wings and body plumage, "light brownish," that of the August males "deep blue-black."

These birds agree perfectly with specimens of both sexes from the Algerian and Tunisian deserts. It is most peculiar that modern collectors and observers have not come across *P. simplex simplex* in southern Nubia, Ambukol, northern Kordofan, Sennaar, and Berber, where it was observed by Hemprich & Ehrenberg and Heuglin. The few old specimens examined are certainly darker than any *P. s. saharae*, but the light colour of the bill, which Erlanger supposed to be one of its differences, is—as in other sparrows—due to age and season. Several specimens from August are in moult, but also the two April birds! No *Passer simplex* moults in April in the Algerian Sahara.

Buchanan only found the Desert Sparrow in the deserts between Agades and Tegguidi. Geyr found the species only as far south as Tazzait, but remarks that the country to the south was not suitable for it. It inhabits sandy desert and breeds in trees, bushes, holes in rocks, buildings, tree-trunks, and in wells.

139. *Passer luteus* (Licht.).

Fringilla lutea Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 24 (1823—"Prope Dongolam Nubiae").

3 ♂ ad., 2 "♂" juv., 1 ♀, Zinder, February 1920.

1 ♂ ad., Takukut, Damergu, 24. iii. 1920.

3 ♂, Agades, 12, 22. iv. 1920.

"Iris dark brown. ♂ ad. bill dull blackish to dark umber-brown, lower paler; ♀ whitish grey with brown tinge."

These specimens agree with others from Nubia (Shendi to Khartum). The species has hitherto only been known from N.E. Africa, except for one specimen got by Poggiolini at Dosso in Djerma, between Say on the Niger and Sokoto.

Buchanan observed, but did not collect, the species also at Timia, Iferoan ("plentiful"), Aguellal; at Agades and Zinder ("fairly plentiful"), Tebernit; he saw them in flocks and found them rather wary, and less easy to approach than most other birds.

[*Passer euchlorus* is apparently entirely restricted to southern Arabia. Heuglin never said—as far as I can find—that it occurred at Massana, but erroneously believed that Hemprich & Ehrenberg's specimens came from the Abyssinian coast. The quotation of Heuglin's second volume given by Reichenow is also wrong.]

140. *Passer griseus griseus* (Vicill.).

Fringilla grisea Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xii. p. 198 (1817—"Etats-Unis!")
 Errore: Senegal, cf. Lafresnaye, *Rev. Zool.* 1839, p. 95).

3 ♂, near Kano, 3.xii.1919, 6.i.1920.

7 ♂, 1 ♀, Zinder, 27.i.-19.ii.1920.

1 ♀ ad., Agades, 22.iv.1920.

1 ♂ ad., Mt. Baguezan, 5,200 feet, 13.v.1920.

"Iris dark brown. Bill in April and May quite black, in the winter nearly always lower mandible paler, brown. Feet pale umber-brown."

Hausa name Dola.

Common bird near Zinder, in great flocks in February near the Baban-Tubki wells near Zinder. At Timia met with in June, young found in hole of acacia tree, 21.vi.1920.

(Cf. systematic notes on subspecies, *Nov. Zool.* 1900, p. 44, 1915, p. 264, *Journ. f. Orn.* 1905, p. 352, 1911, p. 36, 264, *Ibis*, 1918, pp. 471-474.)

141. *Petronia dentata buchanani* subsp. nov.

Petronia formae P. dentata dentata dictae similis sed notaeae pallidiore, magis isabellino hand difficile distinguenda.

♂ ad., Zinder, 19.ii.1920, No. 414, A. Buchanan leg., type of *buchanani*.

"Iris dark umber-brown. Bill brown-black. Feet dark umber-brown. Length 5 in."

The entire upperside is very much paler, almost isabelline. Wing 82 mm.

There are in the British Museum two females collected at Yo and Kuka, near Lake Chad, which must belong to this new subspecies. They are also very much paler than females of *P. d. dentata*, the eyebrow is nearly white, wings 77, 77 mm.

142. *Gymnoris pyrgita pallida* Neum.

Gymnoris pyrgita pallida Neumann, *Bull. B.O. Club*, xxi. p. 70 (1908—Khartum to Senegal).

2 "♂," but I think must be ♂ and ♀, Takukut, Damergu, 21, 22.iii.1920. Wings 83 and 87.5 mm. "Iris dark umber-brown. Bill medium dull blackish grey. Feet medium leaden grey."

Agree with type from Shendi.

143. *Serinus leucopygius riggenbachii* Neum.

Serinus leucopygius riggenbachii Neumann, *Bull. B.O. Club*, xxi. p. 44 (1908—"Senegambia and western Sudan").

2 ♂ juv., near Kano, 3, 23.xii.1919.

3 ♂♀, in moult, Zinder, 30.i.1920.

3 ♂, Takukut, Damergu, 22, 24.iii.1920.

2 ♀ ad., Azzal, Asben, 14.vii.1920 (fresh plumage, bat wings still moulting).

"Iris dark brown. Bill brown, darker in adults, basal two-thirds of lower mandible paler. Feet pale brownish."

This subspecies, of which we have received a series from Riggenbach, mostly from Thiès, is very distinct, differing from *S. l. leucopygius* chiefly in the throat and chest being white with dark greyish-brown spots, which leave a patch in the middle of the throat unspotted. The jugulum and sides of body are heavily spotted, but vary a good deal. Possibly the two Azzal specimens belong to another still paler subspecies, but more material would be required to separate them. The Kano, Zinder, and Damergu specimens certainly agree with the true *riggenbachii* from Senegal. A number were observed at Azzal, but unfortunately only two obtained.

144. *Serinus mozambicus hartlaubii* (Bolle).

Crithagra Hartlaubii Bolle, *Journ. f. Orn.* 1858, p. 355 (West Africa. Restricted terra typica Senegal).

2 ♂, near Kano, 22, 29.xii.1919.

Buchanan says that quantities of this bird are sold at the ships' side at Lagos.

(About the name *mozambicus* see *Ibis*, 1918, p. 242. Unfortunately this name must be adopted.)

145. *Erythrospiza githaginea zedlitzi* Neum.

Erythrospiza githaginea zedlitzi Neumann, *Orn. Monatsber.* 1907, p. 145 (Eastern Algeria and Tunisia, type Biskra).

3 ♂, 1 ♀, Agades, 12, 14.iv.1920. "Iris very dark. Bill ♂ full dull orange-chrome, ♀ dull yellowish chrome. Feet ♂♀ pale whitish brown."

Fairly numerous at Agades, also observed Mt. Baguezan, 2.vii.1920, and at Tebernit (common), and Iberkom in northern Aïr.

Hilgert and I found this species very sparingly among the rocks of the southern Oued-Mya, but Geyr observed it as far south as the Hoggar Mountains, where it did damage to the corn.

146. *Textor albirostris albirostris* (Vieill.).

Coccothraustes albirostris Vieillot, *Nouv. Dict. d'Hist. Nat.* xiii. p. 535 ("Afrique." Restricted typical locality Senegal! Cf. *Nov. Zool.* 1907, p. 485.

3 ♂, 2 ♀, Farniso, near Kano, 5, 6.i.1920. "Iris dark. Bill grey-black. Feet brown-black."

Neither of these birds has the base of the culmen much swollen, nor is it reddish white, but black tinged with white, distal end entirely black. I expect that the colour of the bill changes in the various seasons. (About the anatomy cf. *Bull. Amer. Mus. New York*, xxxvii. p. 243.)

147. *Sporopipes frontalis pallidior* subsp. nov.

Sporopipes formae typicae senegalensi similis, sed pallidior.

♂♀ ad., ♂♀ juv., Zinder, 10. ii., 28. i. 1920.

2 ♂, 2 ♀ ad., Takukut, Damergu, 13, 22. iii. 1920.

"Iris dark brown. Bill pale whitish flesh-colour. Feet whitish umber or fleshy brown. Young birds bill darker, more greyish."

Sporopipes frontalis frontalis (*Loxia frontalis* Daudin, *Traité d'Orn.* ii. p. 445, 1800—Senegal!) comes from Senegambia; it extends apparently across Africa to Abyssinia, at least I cannot distinguish Abyssinian specimens. The Damergu and Zinder birds differ from Senegambian ones in having the hind-neck paler rufous, the back slightly paler, sides of head lighter. Wings of males 67–70, ♀ 67–68 mm. It is small wonder that the desert-like regions of Zinder and Damergu should contain a paler race, and only remarkable that not more of these birds are paler than their brethren in more moist and fertile districts. The pale aspect of two specimens from Zaria, in central Hausaland, has already been noted in *Nov. Zool.* 1915, p. 261; in fact these two birds are somewhat intermediate between *S. f. pallidior* and *S. f. frontalis*. *S. f. loitanus* van Someren from East Africa is darker. Neumann's *S. f. emini* is not known to me, but it would be very strange if the latter—described as being paler!—were the same as typical *frontalis*, when the East African form (Loita, Taveta, Tsavo, etc.) is darker!

Type of *T. f. pallidior*, ♂, Zinder, 9. ii. 1920. No. 345, A. Buchanan leg.

Specimens from March and February are in moult. The young birds are duller and lack the white tips to the frontal feathers.

Hausa name Cheesakee. Seen in middle of bush in company with other birds. Feeding on minute grass-seeds on ground.

148. *Ploceus cucullatus cucullatus* (P. L. S. Müll.).

Oriolus cucullatus P. L. S. Müller, *Natursystem, Suppl.* p. 87 (1776—Senegal. Ex Buffon).

2 ♂ in non-breeding plumage, 1 ♀, near Kano, December 1919.

Hausa name, Gado.

149. *Ploceus luteolus luteolus* (Licht.).

Fringilla luteola Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 23, note (1823—Senegambia!).

♂? near Kano, 2. i. 1920, juv.

2 ♂, nearly in breeding plumage, 2 in non-breeding plumage, 2 ♀, Zinder, January and February 1920.

♂, in full plumage, Agades, 12. iv. 1920.

♂♀, in full plumage, Mt. Baguezan, 31. v., 1. vi. 1920.

♂ juv. (first plumage), Timia, 22. vi. 1920.

Also observed at Igouloulof, Iferouan, Tcbernit, and Aouderas.

150. *Ploceus vitellinus vitellinus* (Licht.).

Fringilla vitellina Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 23 (1823—Senegambia!).

♀, Agades, 11. iv. 1920.

1 (in non-breeding dress), ♀, Mt. Baguezan, 5,200 feet, 9. v., 1. vi. 1920.

151. *Pyromelana franciscana franciscana* (Isert).

Loxia franciscana Isert, *Schriften Ges. naturf. Freunde Berlin*, 1789, p. 332, Taf. 9 (near Accra on the Gold Coast).

2 ♂, in brown plumage, 1 ♀, near Kano, 29. xii. 1919, 7. i. 1920.

152. *Amadina fasciata fasciata* (Gm.).

Loxia fasciata Gmelin, *Syst. Nat.* i. 2, p. 859 (1789—ex Brown, *Ill.* p. 64, pl. 27—no locality! I substitute *Senegal*, as these birds were mostly introduced from there).

4 ♂, 1 ♀, Zinder, January and February 1920. "Iris dark brown. Bill dull whitish grey. Feet whitish brown."

These specimens agree well with Senegal ones. The amount of barring on the back is very variable.

Hausa name Youngka-Allah or Beywahallah.

Plentiful on the wells of Baban Tubki near Zinder. Seeds of *Pennisetum* and *Sorghum* in stomachs.

153. *Aidemosyne cantans cantans* (Gm.).

Loxia cantans Gmelin, *Syst. Nat.* i. 2, p. 859 (1789—ex Brown, *Ill.* p. 66, pl. 27—no locality! Dakar, Senegal, is the designated locality, cf. Selater & Praed, *Ibis*, 1918, p. 440!).

2 ♂, 3 ♀, near Kano, 30. xii. 1919, 6. i. 1920.

♀, Zinder, 30. i. 1920.

♂ ♀? Agades, 22. iv., 9. vii. 1920.

These birds agree quite with Senegal specimens, of which we have a good series. They do not show any bars on the upperside except one male from Kano (No. 123). See the review of the subspecies in *Ibis*, 1918, pp. 439, 440.

Were also observed at Aderbissinat in August and Aouderas in July. Very few noticed at Agades.

154. *Pytelia melba citerior* Strickl.

Pytelia citerior Strickland, *Contr. Orn.* 1852, p. 151 (Kasamanze River, Senegambia).

1 ♂ ad., 1 ♀ juv., near Kano, 27. xii. 1919, 5. i. 1920.

2 ♂, 3 ♀, Zinder, 4, 6. ii. 1920.

The ♂ from Kano is richer in colour, darker than the Zinder ones, but as the latter are worn, the difference is probably due to the state of their plumage.

Buchanan found these birds frequenting under-brush in undisturbed bush country and very shy. Tiny grass seeds found in crop.

155. *Estrilda*¹ *senegala brunneiceps* (Sharpe).

Lagonosticta brunneiceps Sharpe, *Cat. B. Brit. Mus.* xiii. p. 277 (1890—"north-eastern Africa throughout eastern Africa and the south-east and south-west portions of the continent." Partim! Restricted typical locality Erithrea; type Maragaz, Eritrea, in Brit. Mus.).

3 ♂, Zinder, 16. ii. 1920.

1 ♂, 2 ♀, Aouderas, Asben, 26, 30. vii. 1920.

♂ juv. Timia, Asben, 23. vi. 1920.

¹ I propose to suppress the genus *Lagonosticta*. Certainly *Estrilda cinerea* and *senegala* cannot be separated generically.

♂ ad. : " Iris dark brown, narrow bare ring around eye clear yellow. Bill medium dull crimson, palest at base, blackish along top of culmen and along lower mandible as well as on cutting-edges. Feet umber-brown."

Also observed in May at Baguezan and at Agades. " It is essentially a bird of cultivated districts. Very plentiful in Hausaland, but not so in Asben."

Specimens from the Galla countries have much browner females, but I cannot satisfactorily separate the males !

A nest was found in the recess of ceiling logs in one of the buildings in the fort at Agades on April 14. It contained two glossless white eggs, measuring 15.4×11.5 and 14×11.2 mm.

156. *Estrilda cinerea* (Vieill.).

Fringilla cinerea Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xii. p. 176 (1817—" Afrique." As terra typica I designate Senegal, whence these birds have been introduced for a hundred years).

2 ♀ ad., Farniso, near Kano, 27. xii. 1919. " Iris dark. Bill reddish purple. Feet blackish brown."

157. *Uraeginthus bengalus bengalus* (L.).

Fringilla bengalus Linnaeus, *Syst. Nat.* ed. xii. i. p. 323 (1766—ex Brisson, Bengal errore ! 1 substitute the correct locality Senegal !).

1 ♂, 1 ♀ ?, near Kano, 26, 29. xii. 1919.

1 ♂, 1 juv., Zinder, 13. ii. 1920.

♂ ♀, Damergu, 22. iii. 1920.

" Iris medium brick-red. Bill medium reddish purple, tip and cutting-edges black. Feet pale umber-brown."

Hausa name Assèsèta.

These birds are mostly in such worn plumage that it is difficult to compare them satisfactorily, but I do not think they belong to any other race. They are not *perpallidus*. *U. b. togoensis* appears to me to be indistinguishable from *U. b. bengalus*.

158. *Steganura paradisea verreauxii* (Cass.) ?

Vidua verreauxii Cassin, *Proc. Acad. Philad.* 1850, p. 56 (Abyssinia).

2 ♂ ad., 2 ♂ in first plumage, Zinder, 30. i., 17. ii. 1920.

I cannot be sure from this limited material (the fully plumaged males worn) to which race these birds belong. The nape-band is brown in the middle, faded yellow (in one merely cream-colour) on the edges. I do not think, however, that they ever had the deep brown band of the quite distinct *S. p. aucupum* from Senegambia.

Hausa name Zelidu.

159. *Hypochera chalybeata neumanni* Alex.

Hypochera neumanni Alexander, *Bull. B.O. Club*, xxiii. p. 33 (1908—" Yo, near Lake Chad, 19. xi. 1904").

2 ♂ ad., 1 ♂, moulting from juv. to ad., 2 ♂ juv., near Kano, 5, 23. xii. 1919 2. i. 1920.

1 ♀, Zinder, 16. ii. 1920.

These specimens agree absolutely with the form *neumanni* of Alexander, which he also collected near Bautchi and which we have from Zaria, central Hausaland. They are quite different from Alexander's *nigeriae*, which was badly described and is still unique. Cf. *Nov. Zool.* 1915, p. 263, *Ibis*, 1918, p. 450. Though the brown wings of the *Hypocherae* may possibly not be a *specific* character, they are a *constant* one, and not always "due to the faded condition of the plumage," as Alexander suggested, *Bull. B.O. Club*, xxiii. p. 15. Of course, quite fresh feathers are darker than old faded ones, but dark-quilled forms like *ultramarina*, *chalybeata* and others, have not the brown quills which *funerea*, *wilsoni*, and *amauropteryx* have in freshly moulted plumage. In the excellent review of these birds in *Ibis*, 1918, pp. 449, 450, the colour of the wings has not been mentioned, but it would have enhanced the utility of the authors' review.

Mr. Buchanan says he also saw this species at Agades !

160. *Lamprotornis caudatus* (P. L. S. Müll.).

Turdus caudatus P. L. S. Müller, *Natursystem*, *Suppl.* p. 144 (1776—Senegal ! Ex Daubenton and Buffon).

7 ♂ ad., 1 ♀ (much worn and faded to earthy brown, probably young, commencing to moult tail), near Kano, December 1919, January 1920. "Iris clear creamy white. Bill and feet black."

Hausa name Kilach-illa.

The variation in colour in these birds is very striking. Of the seven adult males, six are purplish blue, one green. Among the masses sent by Riggensbach from the western Senegal Colony, mostly from Diourbel, Ouomine, Gassam, and Thiès, green ones are nearly as numerous as purplish-blue ones, and a few are of a wonderful purple nearly all over. (Cf. Neumann, *Journ. f. Orn.* lxxv. ii. p. 204, note 13, 1917.)

161. *Spreo pulcher pulcher* (P. L. S. Müll.).

Turdus pulcher P. L. S. Müller, *Natursystem*, *Suppl.* p. 139 (1776—Senegal).

2 ♂, 1 ♀, near Kano, 5.i. 1920.

1 ♀, Takukut, Damergu, 24.iii. 1920.

"Iris creamy white. Bill and feet black."

These specimens agree with the typical Senegal birds, though the wings are sometimes somewhat long. ♂ 118 and 122 mm., the first being the same as several Senegal males, the latter apparently an exceptional outside measurement ; ♀ 111 and 113 mm., which is about the same as the bigger Senegal females.

In August Buchanan saw many at Aderbissinat. Small numbers were seen south of Baguezan, but unfortunately not collected. They were seen in acacia bush, but none farther north. Near Takukut (Damergu) fairly common.

162. *Lamprocolius chalybeus hartlaubi* Neum.

Lamprocolius chalybeus hartlaubi Neumann, *Orn. Monatsber.* 1908, p. 64 (Senegal).

3 ♂, Zinder, 27.i., 6.ii. 1920.

♀, Agades, 9.vii. 1920.

♂, Azzal, Asben, 13.vii. 1920.

"Iris yellow-chrome or orange-yellow. Bill and feet black."

Hausa name Shya ; Tuareg Tagadoquot ; at Zinder called Eyrindoula.

Nesting numerously in trees in the flooded area at Aderbissinat in August. Very few at Agades and Azzal, but never seen farther northwards. Seen near villages and in low bush, generally in small flocks. Small insects found in stomachs.

The specimens agree perfectly with typical *L. c. hartlaubi* from Senegal ; the subspecies is a very distinct one, differing as described by its author.

163. *Buphagus africanus* (L.).

Buphaga africana Linnaeus, *Syst. Nat.* ed. xii. i. p. 154 (1766—Senegal. Ex Brisson !).

♀ ad., Farniso, near Kano, 2.i.1920. "Iris rich reddish orange. Bill : outer half rich reddish orange-chrome ; inner half full yellow-chrome. Feet brown-black."

164. *Cryptorhina afra* (L.).

Corvus afer Linnaeus, *Syst. Nat.* ed. xii. i. p. 157 (1766—"Senegalia." Ex Brisson ii. p. 40, pl. iii.).

2 ♂, 1 ♀ ad., Kano, 3.xii.1919.

1 ♂, 1 ♀, Zinder, 19.ii.1920.

"Iris : narrow inner ring clear sienna, outer broader ring beautiful clear purple. Bill and feet black in ♂. In ♀ basal two-thirds whitish, as if stained with blood-red."

The Kano specimens are in beautiful fresh plumage, with steel-blue gloss, wings and tail still moulting, the Zinder ones worn, tail and wings browner, upperside less glossy, duller.

Except at Kano only seen near Zinder, chiefly near the wells of Baban Tubki, in flocks.

165. *Corvus albus* P. L. S. Müll.

(*Corvus scapulatus* auct.).

Corvus albus P. L. S. Müller, *Natursystem, Suppl.* p. 85 (1776—Senegal. Ex Buffon).

2 ♂, 1 ♀ ad., Kano, 11, 13.xii.1920.

These are the only specimens collected, but the species was also seen at Aderbissinat, many at Aouderas in July, at Baguezan in May, Timia in June, Iferoan and Igouloulof in northern Aïr, Tebernit, and Assode. They were fairly common at Zinder, very common at Agades.

An egg was taken near Mt. Baguezan, 29.vi.1920. It measures 41.5×19.2 mm., and resembles eggs of other crows and ravens. The nest was in the top of an acacia tree in a secluded valley. The parent bird was on the nest, which contained only this single egg.

Hausa name Hankaka.

166. *Corvus corax ruficollis* Less.

(*Corvus umbrinus* auct.).

Corvus ruficollis Lesson, *Traité d'Orn.* p. 329 (1831—no locality ! Type probably Cape Verde Islands. Cf. *Nov. Zool.* 1913, p. 37).

♂, Mt. Baguezan, Asben, 10.v.1920.

♀, Agades, 16.iv.1920.



Angus Buchanan phot.

CATTLE BEING WATERED, BABAN-JUBKI WELLS, ZINDER.



Angus Buchanan phot.

OUTSKIRTS OF ZINDER.